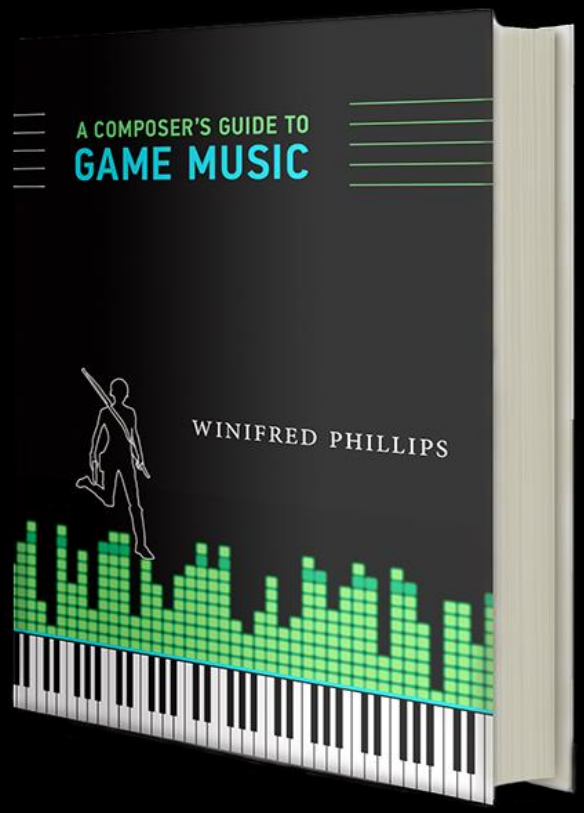
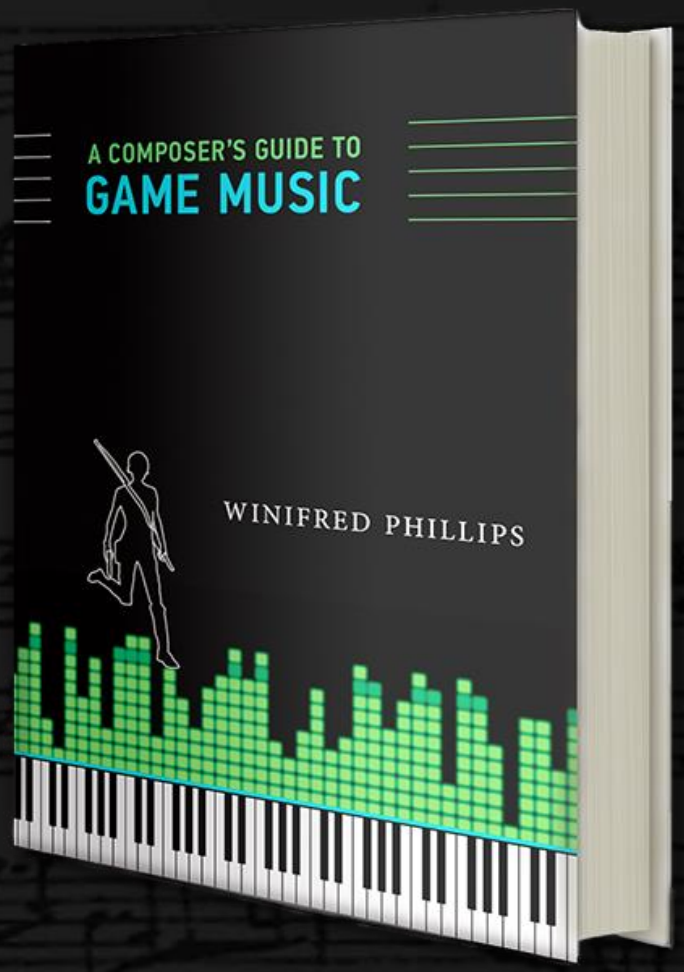


Advanced Composition Techniques for Adaptive Systems

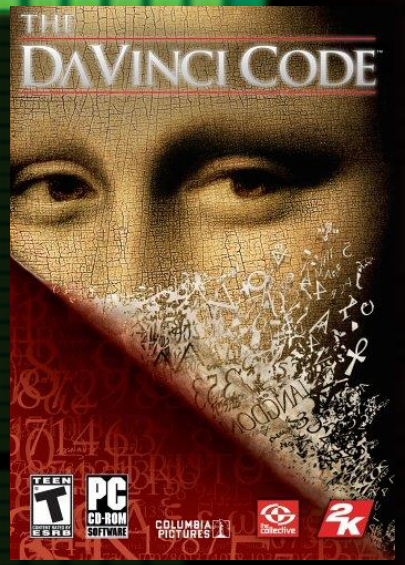
Speaker Name: Winifred Phillips
Twitter: @winphillips
Facebook.com/winifredphillips

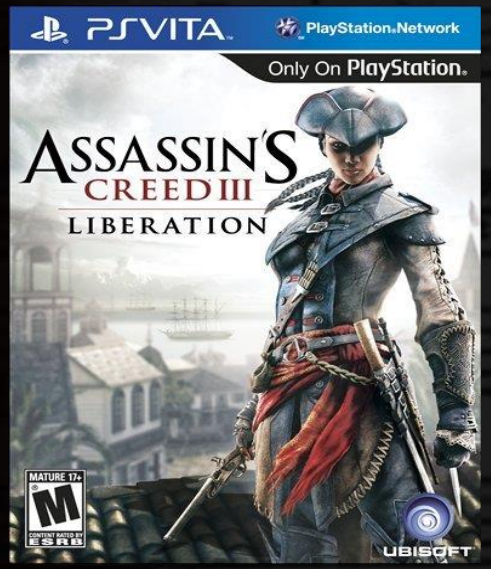
GAME DEVELOPERS CONFERENCE®
MOSCONE CENTER · SAN FRANCISCO, CA
MARCH 2-6, 2015 · EXPO: MARCH 4-6, 2015

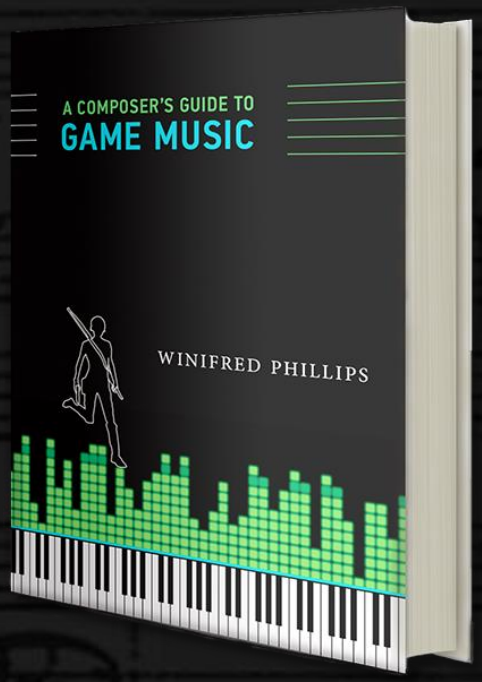
Winifred Phillips



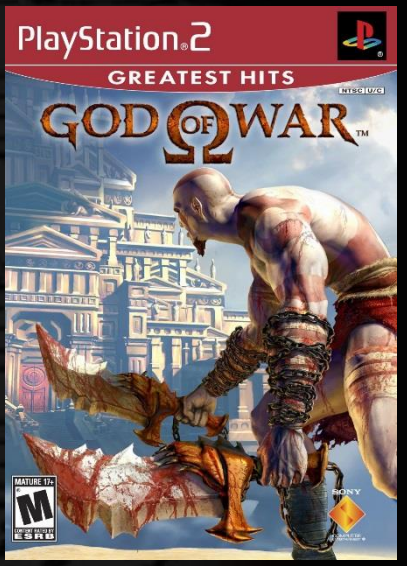
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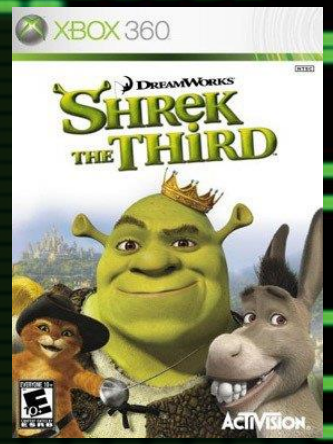


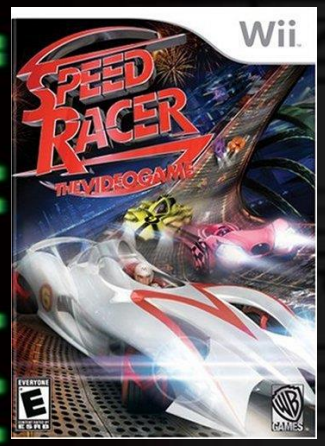


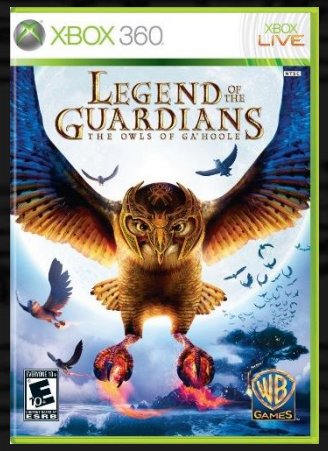


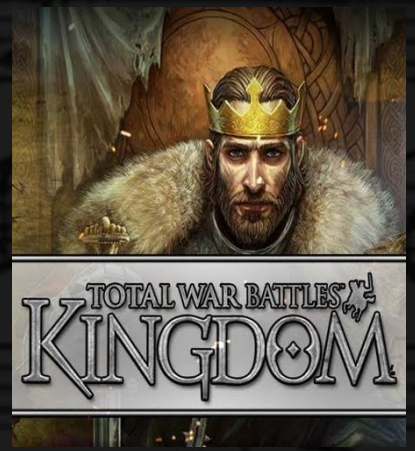




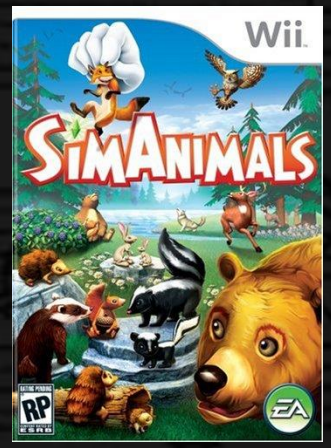






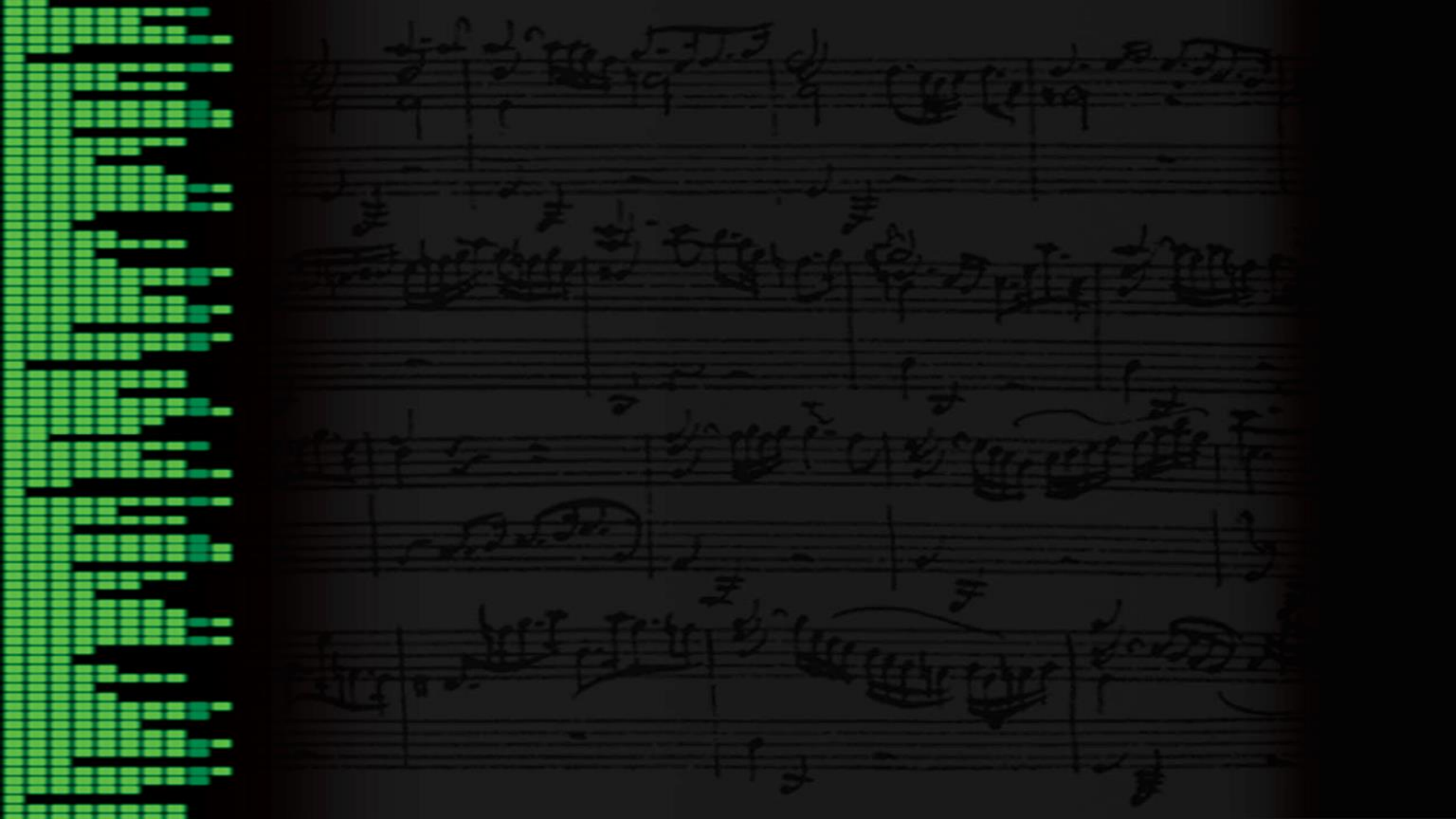








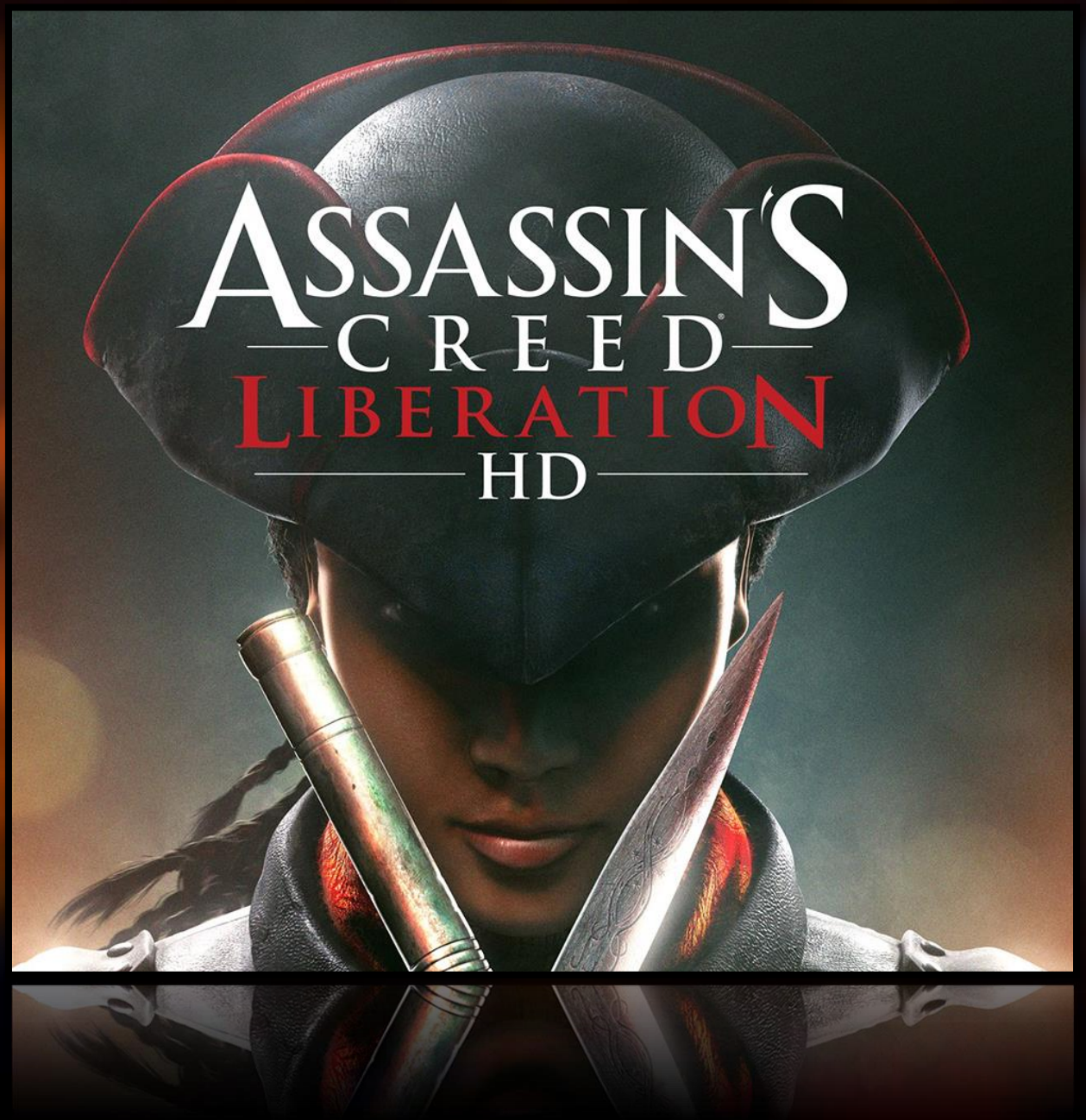
Advanced Composition Techniques for Adaptive Systems



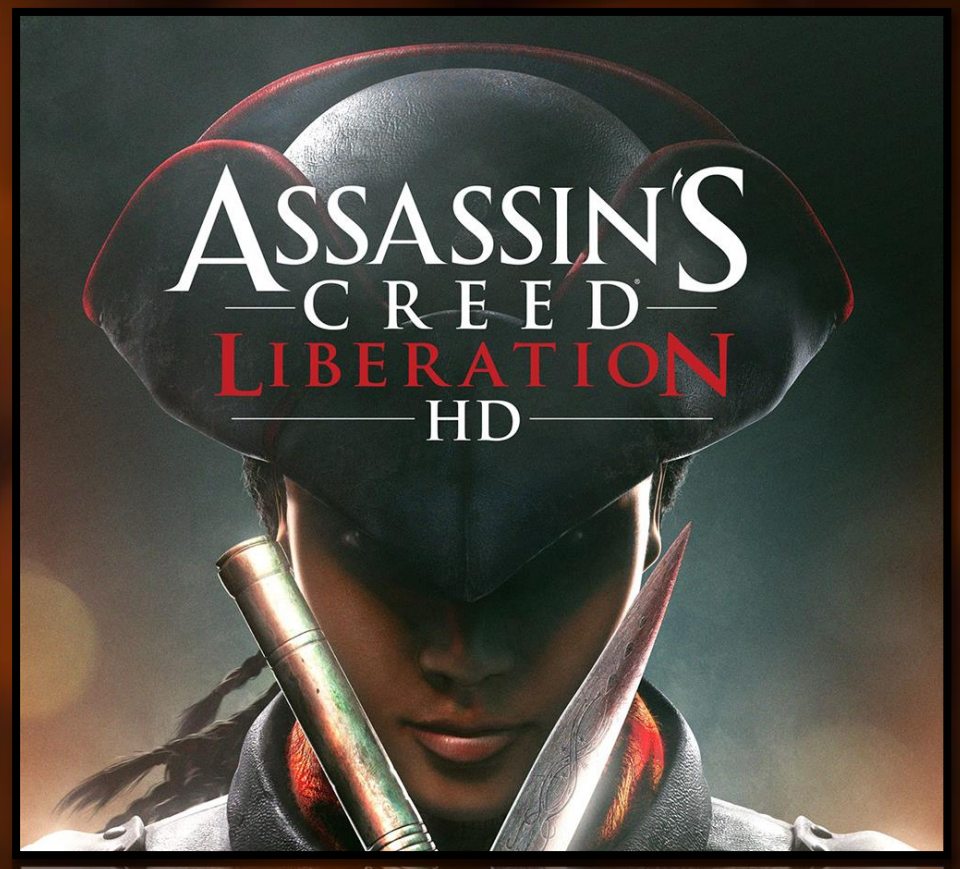

Frogger

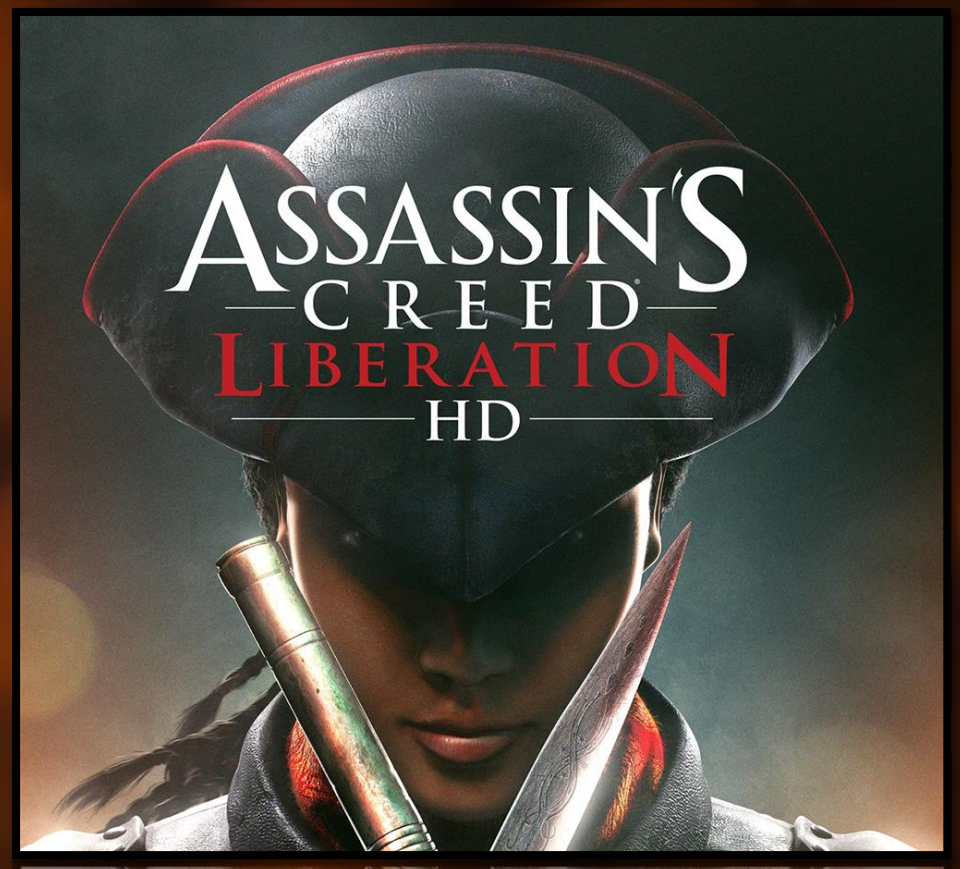

Frogger
✓ Crossing the road – moderate tempo


Frogger
✓ Crossing the road – moderate tempo
✓ Crossing the river – faster tempo

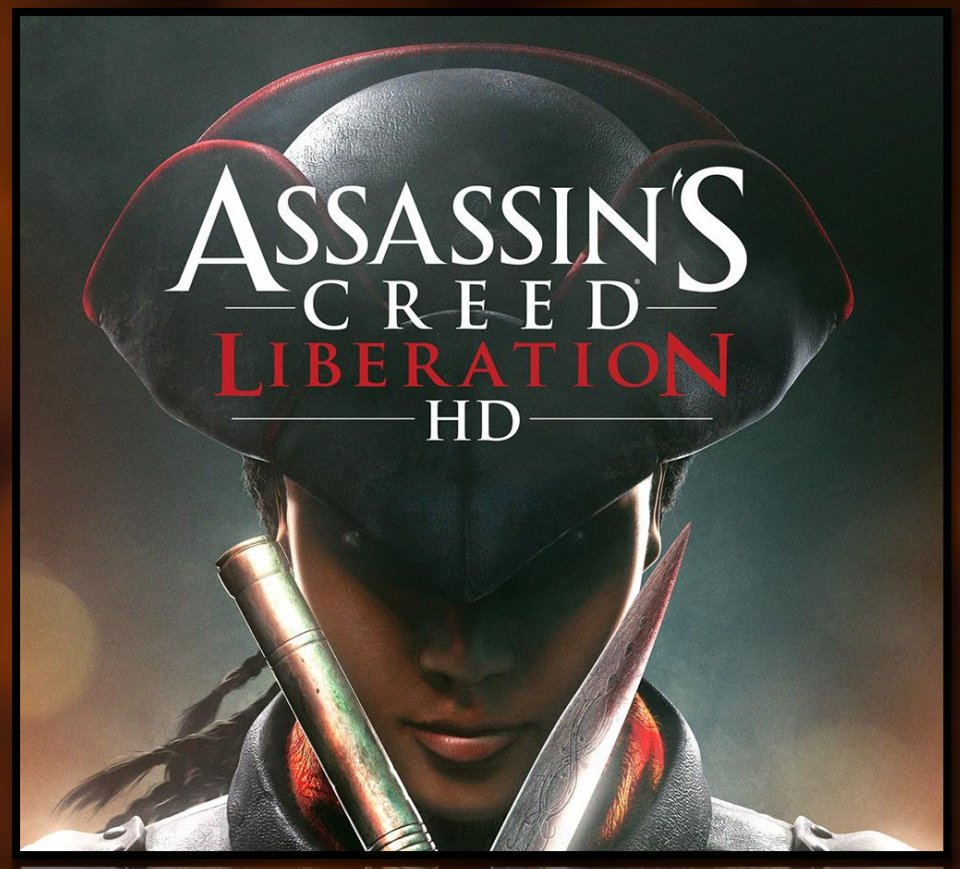

ASSASSIN'S
CREED
LIBERATION
HD




ASSASSIN'S
CREED
LIBERATION
HD



- ✓ Exploration
  moderate tempo



- ✓ Exploration
  moderate tempo
- ✓ Rowing on the river
  Faster Tempo

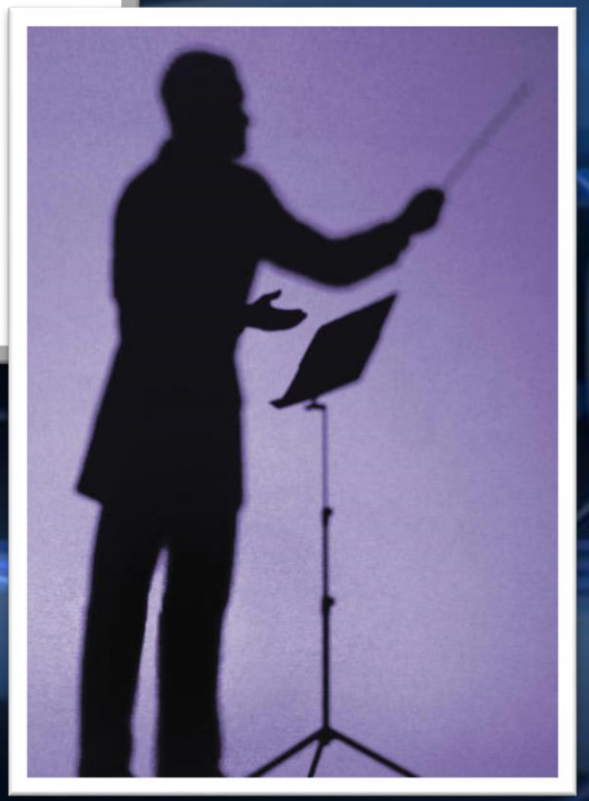


- ✓ Exploration
  moderate tempo
- ✓ Rowing on the river
  Faster Tempo
- ✓ Triggers make the music interactive

It's all up to the player







Structure?
Components?
Triggers?
Mix?

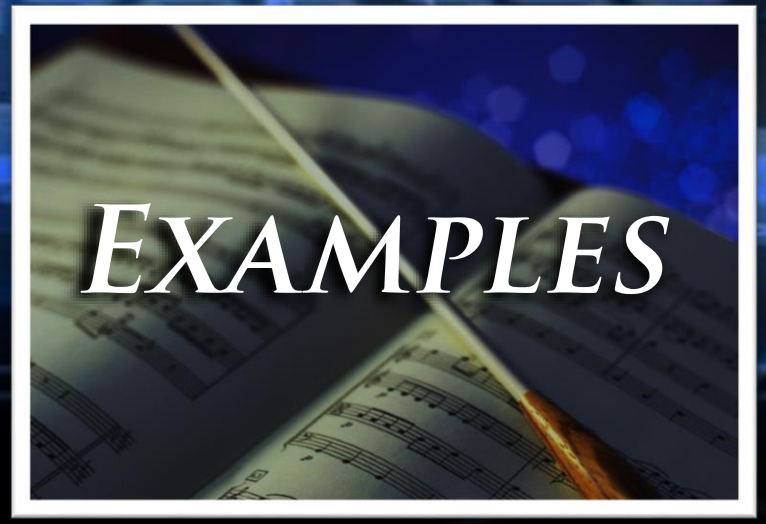
How does the music
Support the game?






Overview


Overview


Examples

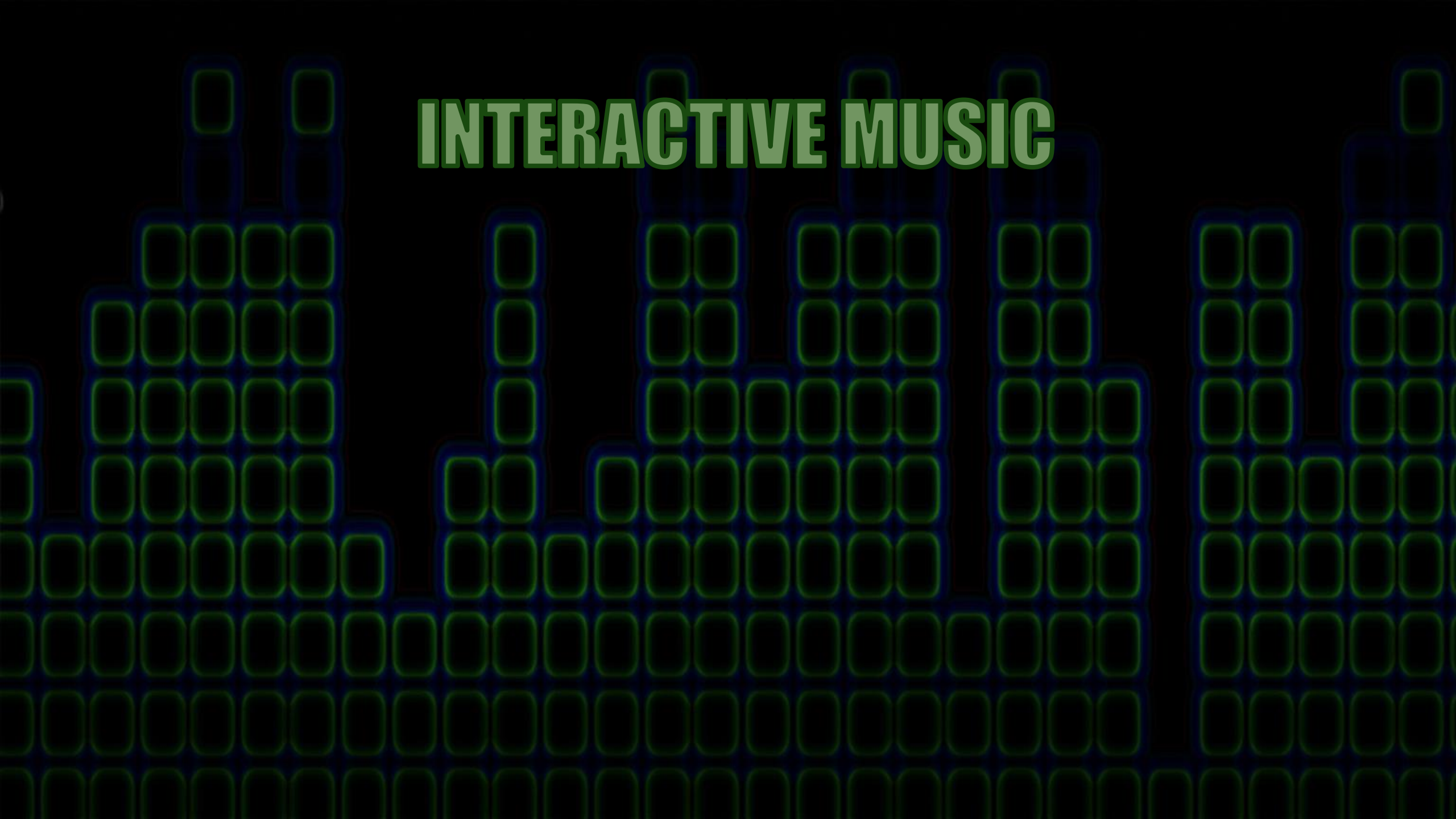

Overview


Examples


Functions



INTERACTIVE MUSIC



INTERACTIVE MUSIC



Recorded Music

INTERACTIVE MUSIC



Recorded Music

- ✓ Horizontal Resequencing
- ✓ Vertical Layering

INTERACTIVE MUSIC



Music Data

INTERACTIVE MUSIC



Music Data

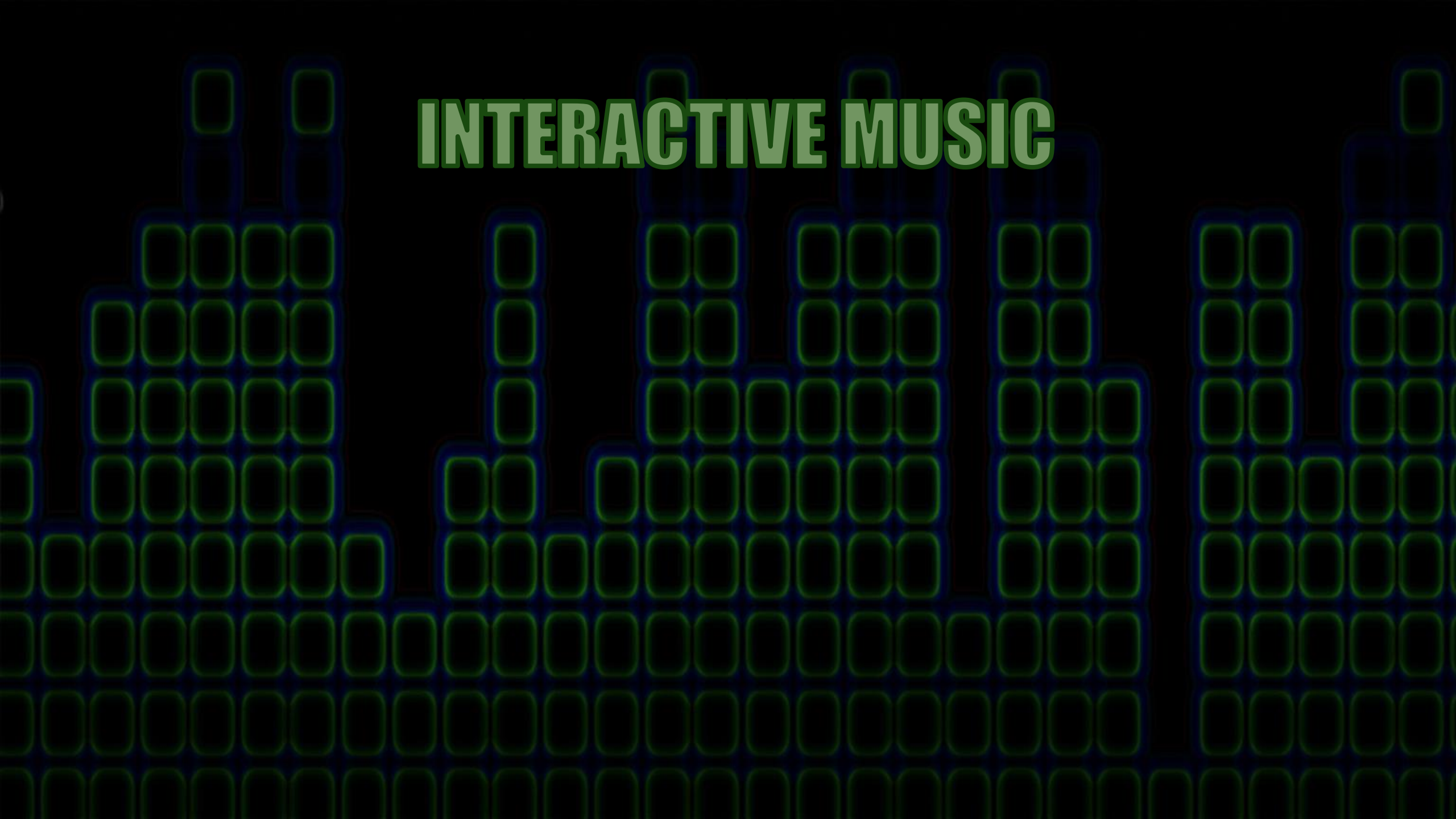
- ✓ MIDI
- ✓ MOD
- ✓ Generative System

INTERACTIVE MUSIC





INTERACTIVE MUSIC




INTERACTIVE MUSIC




N
W
E
S


N
W
E
S







Rührt dieser Zauberthon empfindlich deine Brust,
Erregt die Saitenspiel bey der vergnügte Lust.
Wird durch die Harmonie der Sinnen Kunst benommen:
Gedencke nur dabey: Sie ist vom Himmel kommen.

TABLE de MUSIQUE.



TABLE de MUSIQUE.





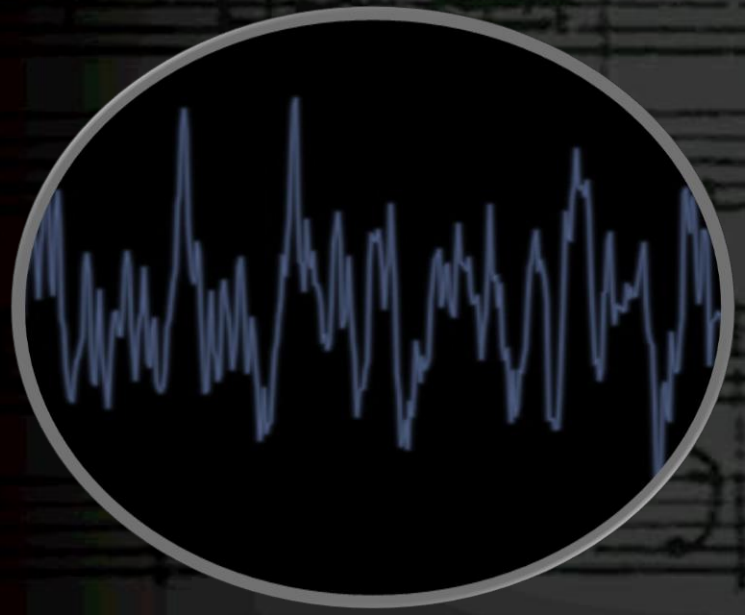


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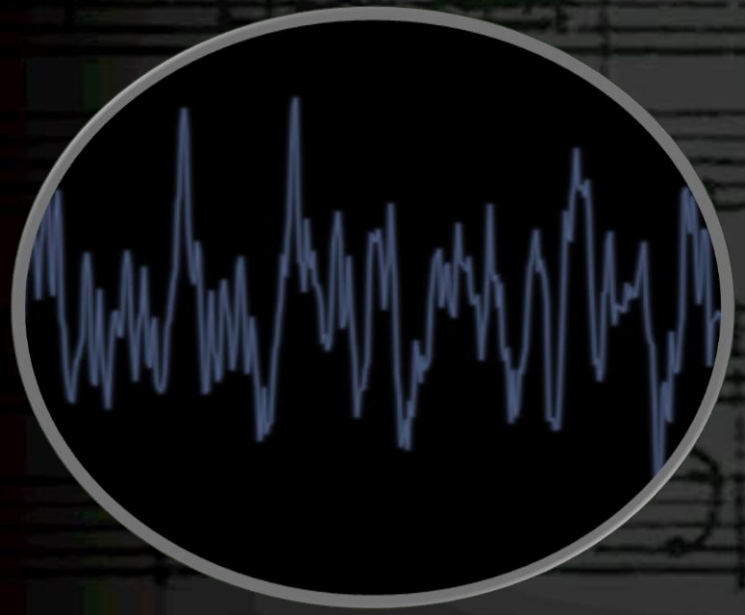
INTERACTIVE MUSIC



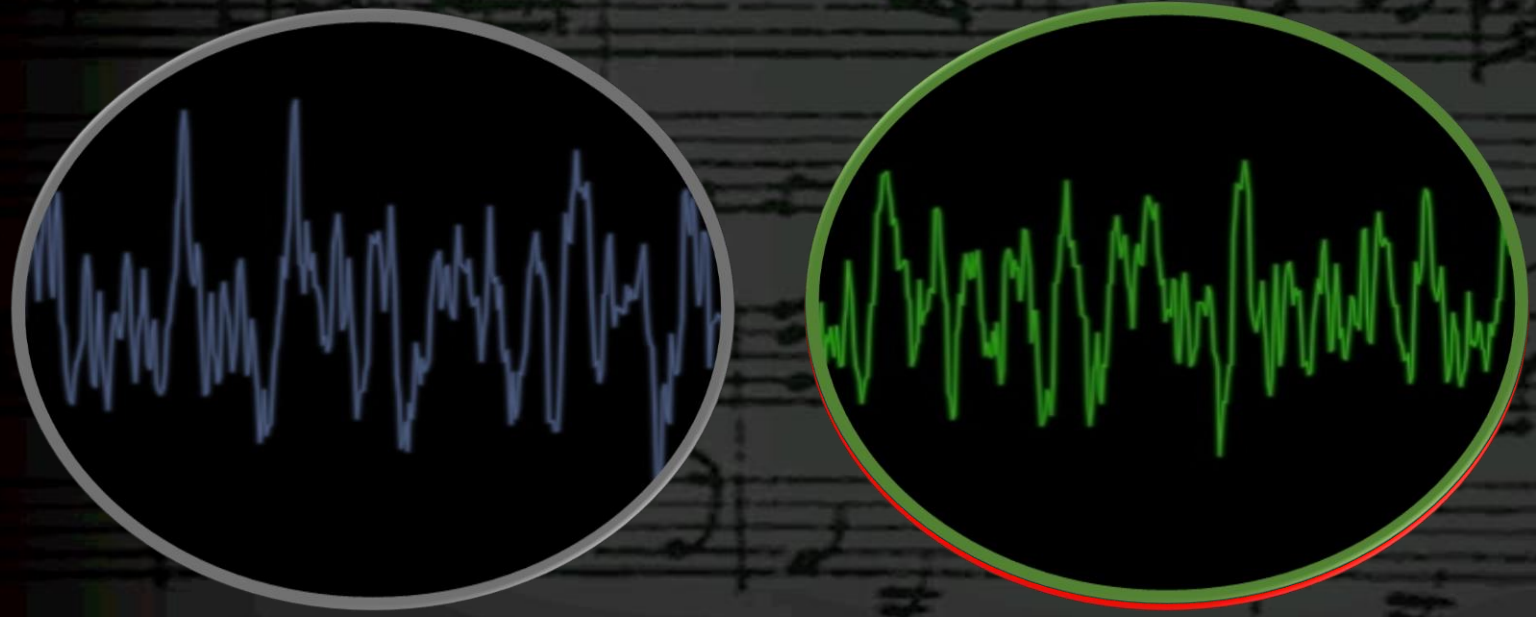
Recorded Music

- ✓ Horizontal Resequencing

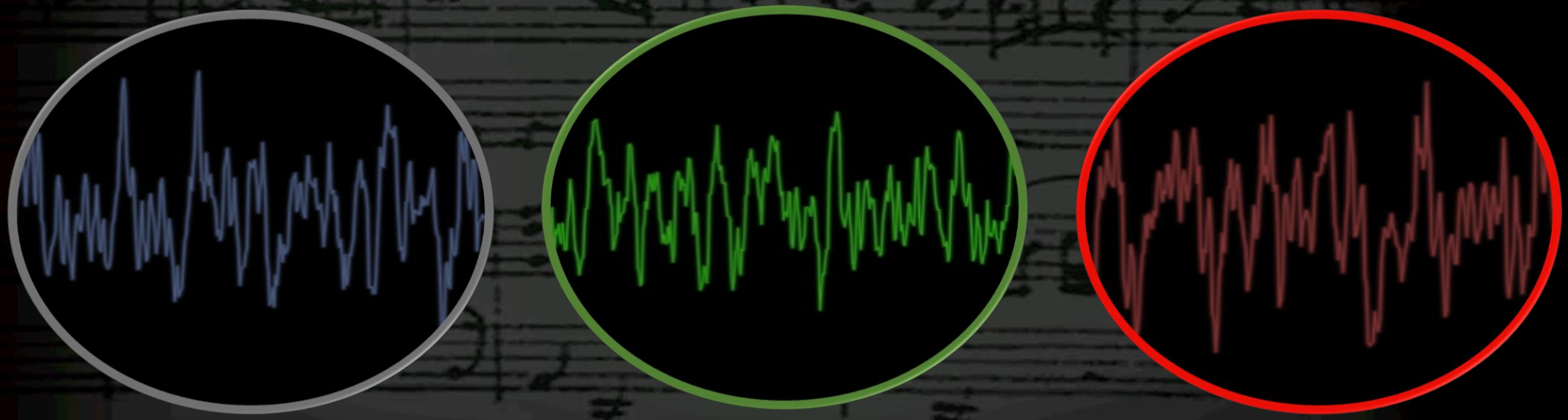
Horizontal Resequencing



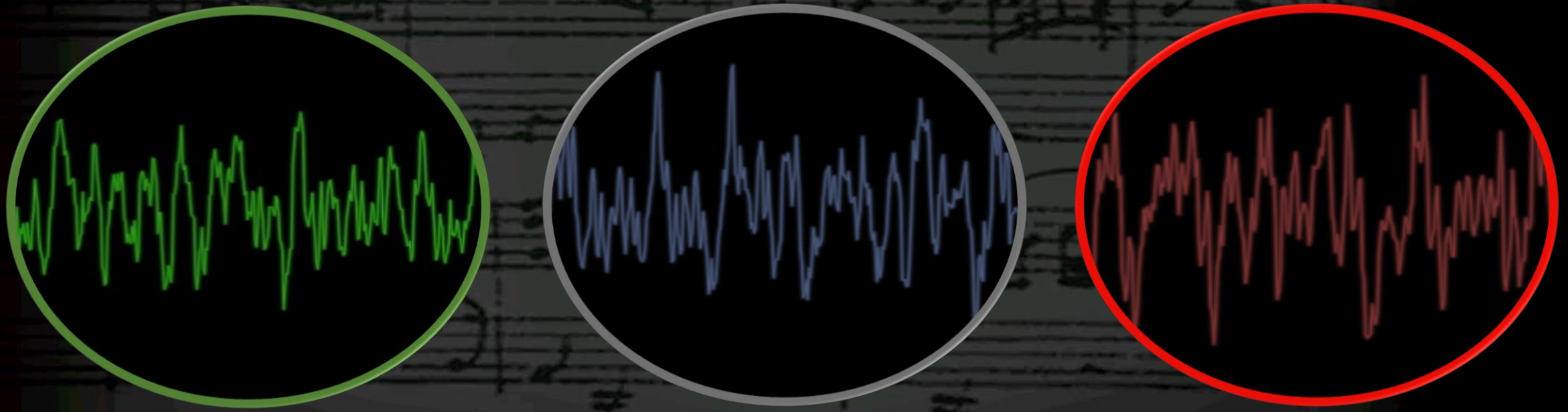
Horizontal Resequencing



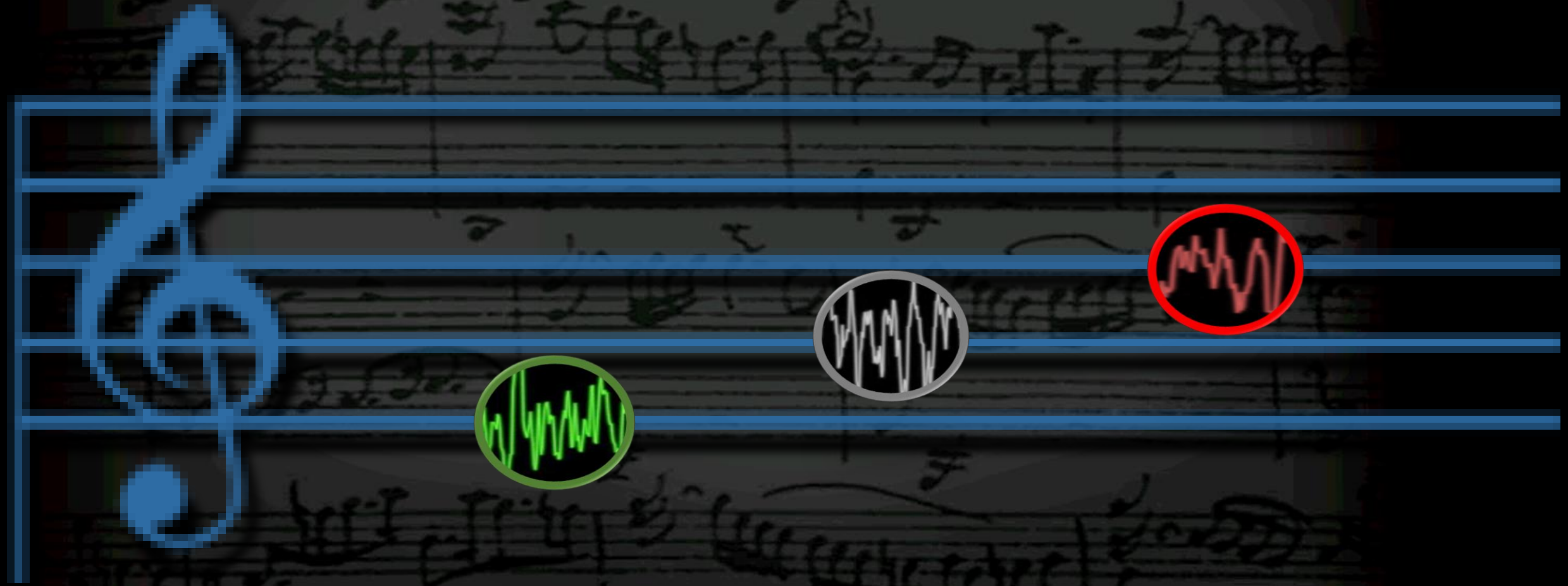
Horizontal Resequencing



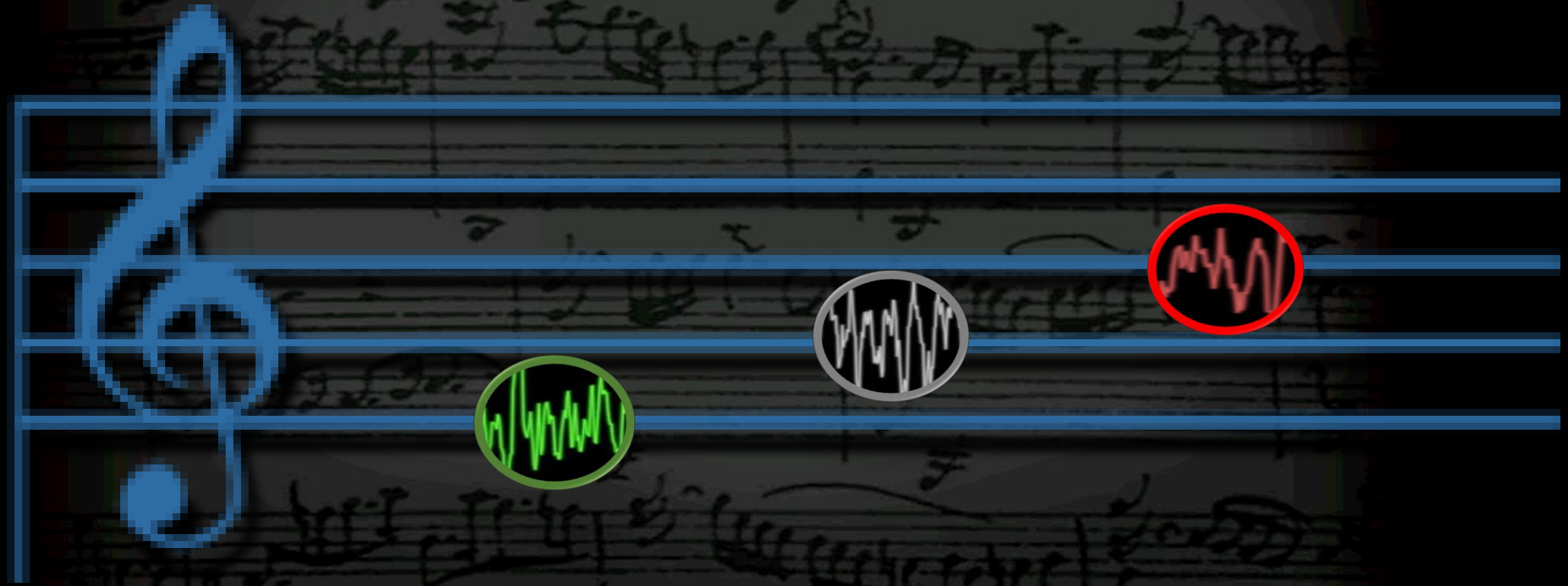
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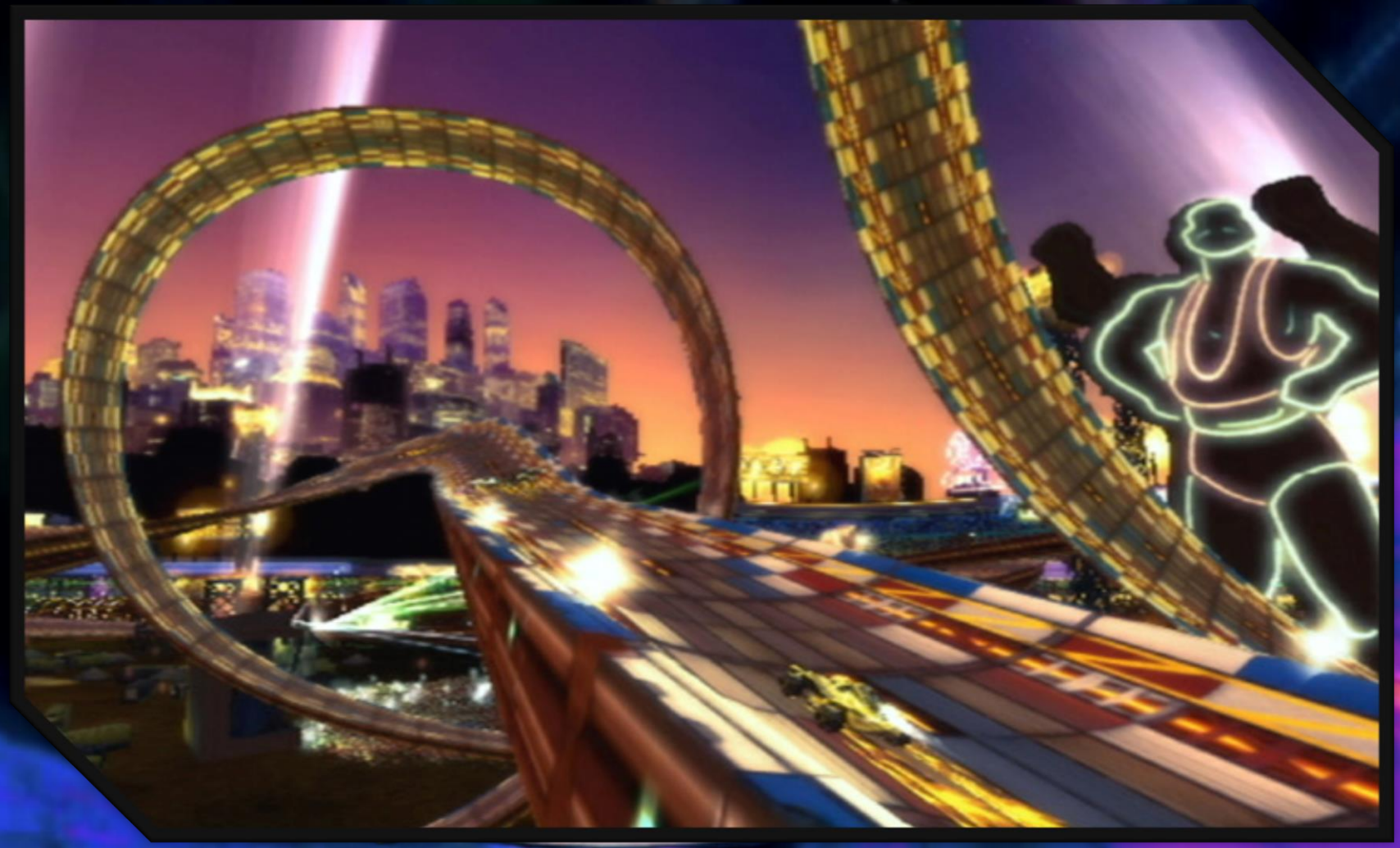
Horizontal Resequencing



Horizontal Resequencing

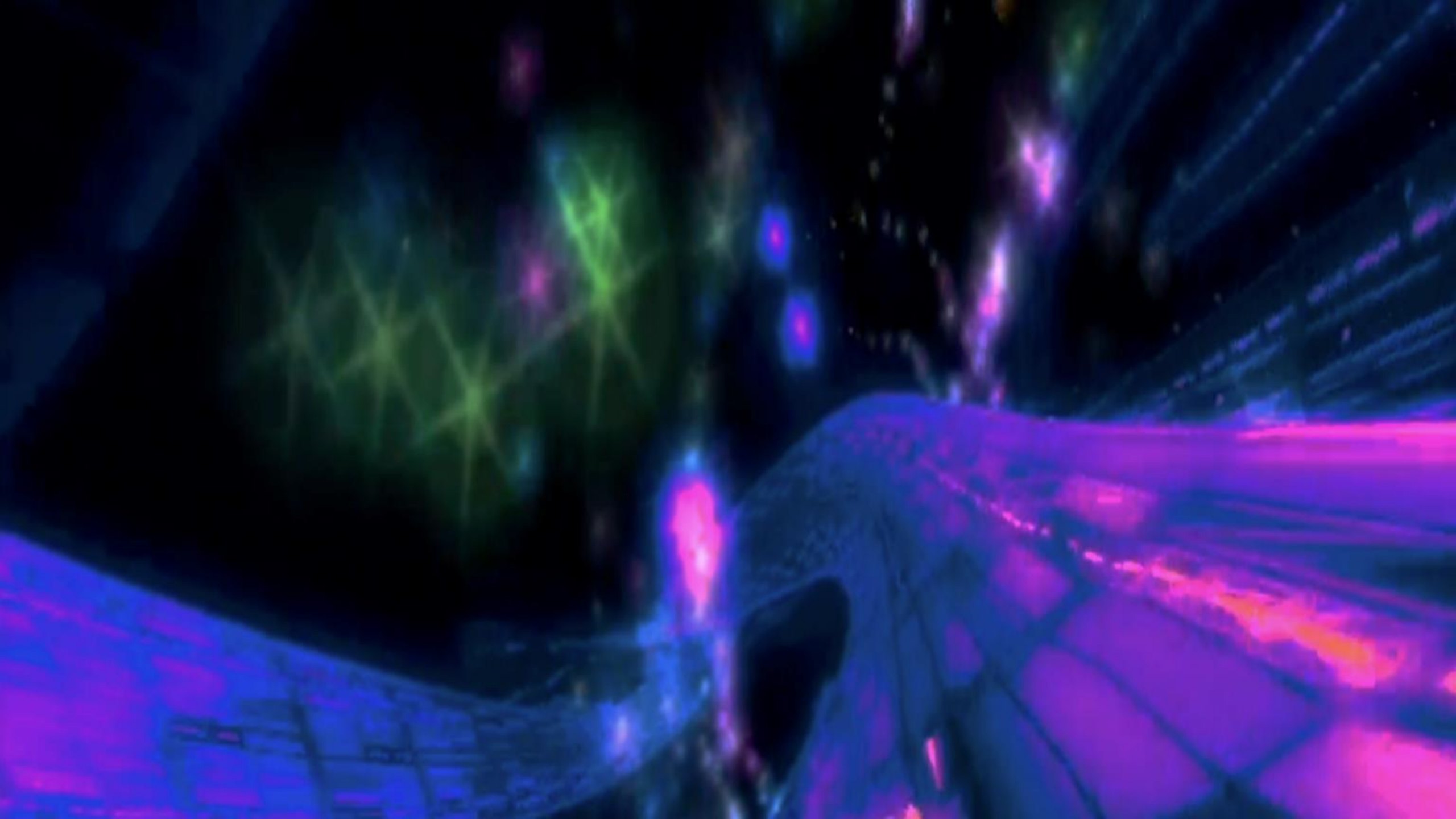


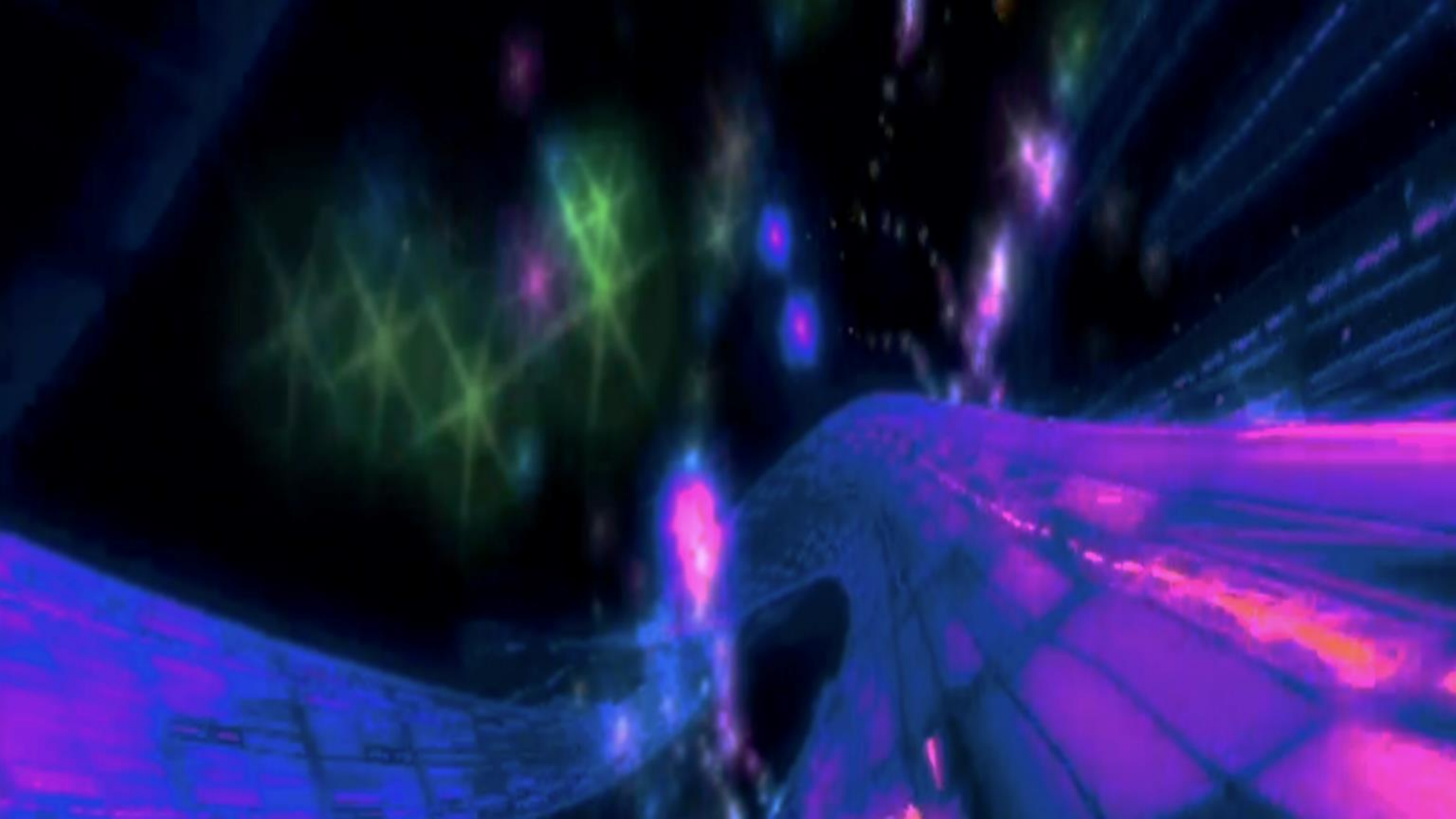

SPEED RACER
THE VIDEOGAME

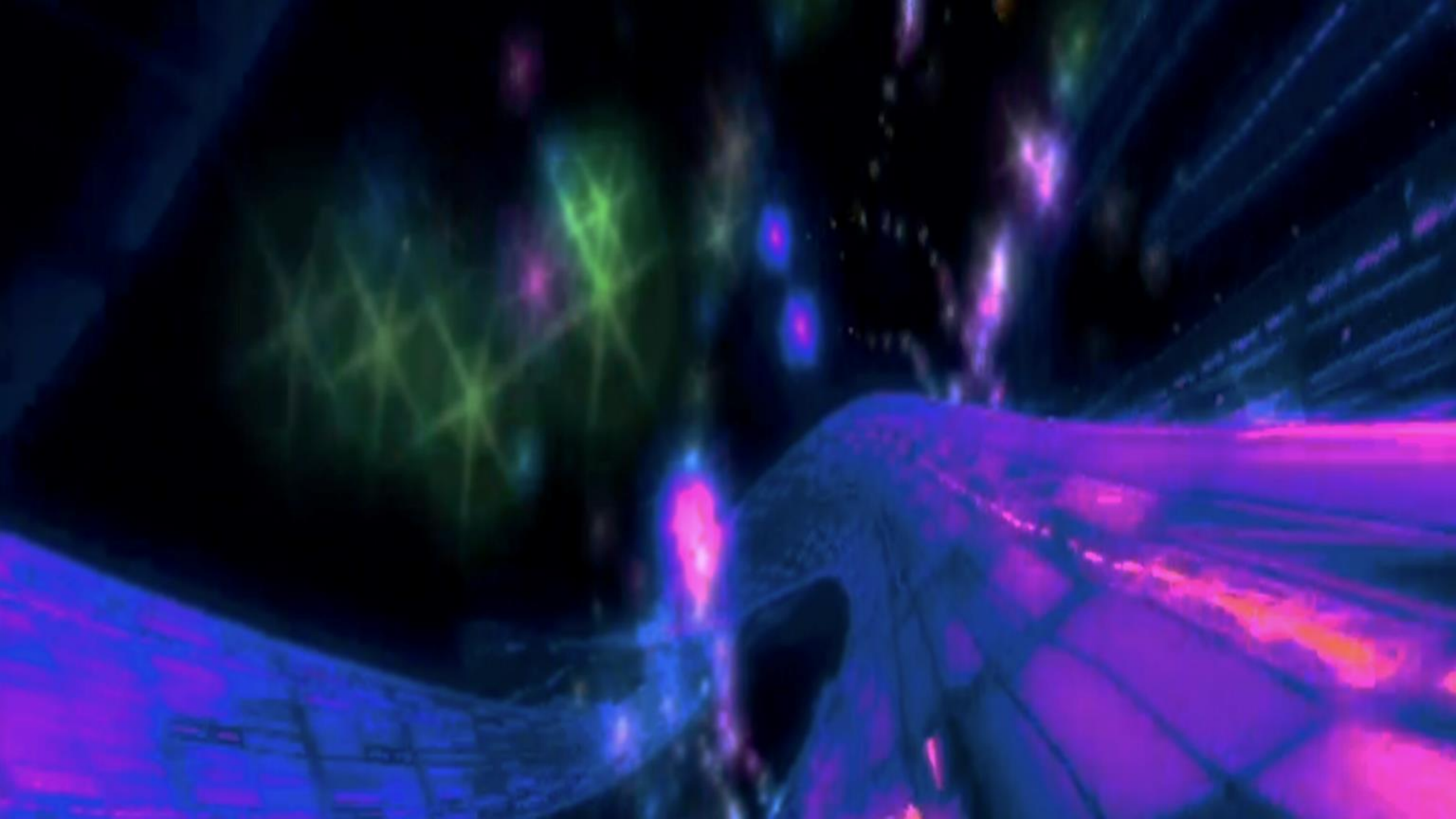



Zone Mode


Zone Mode

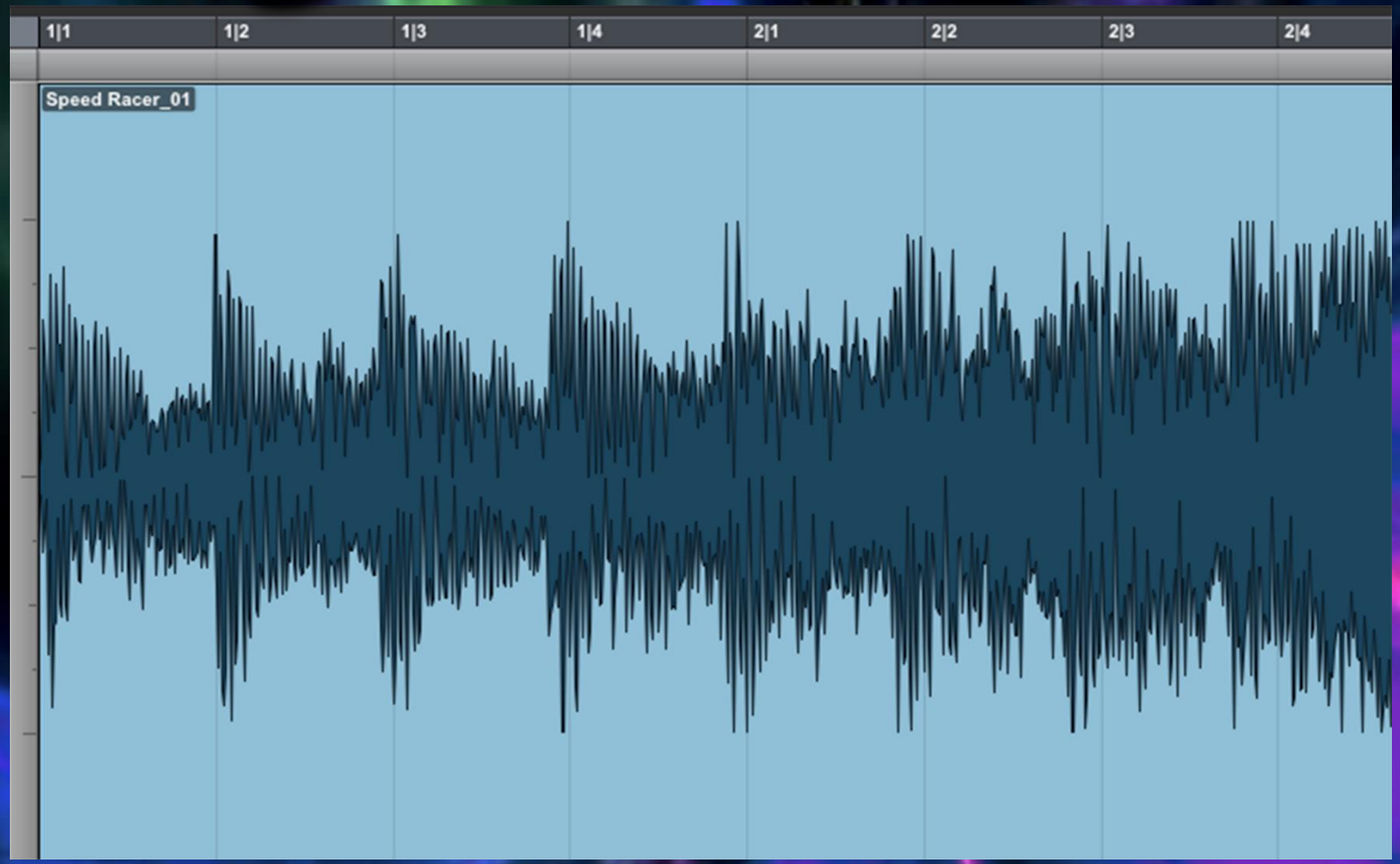




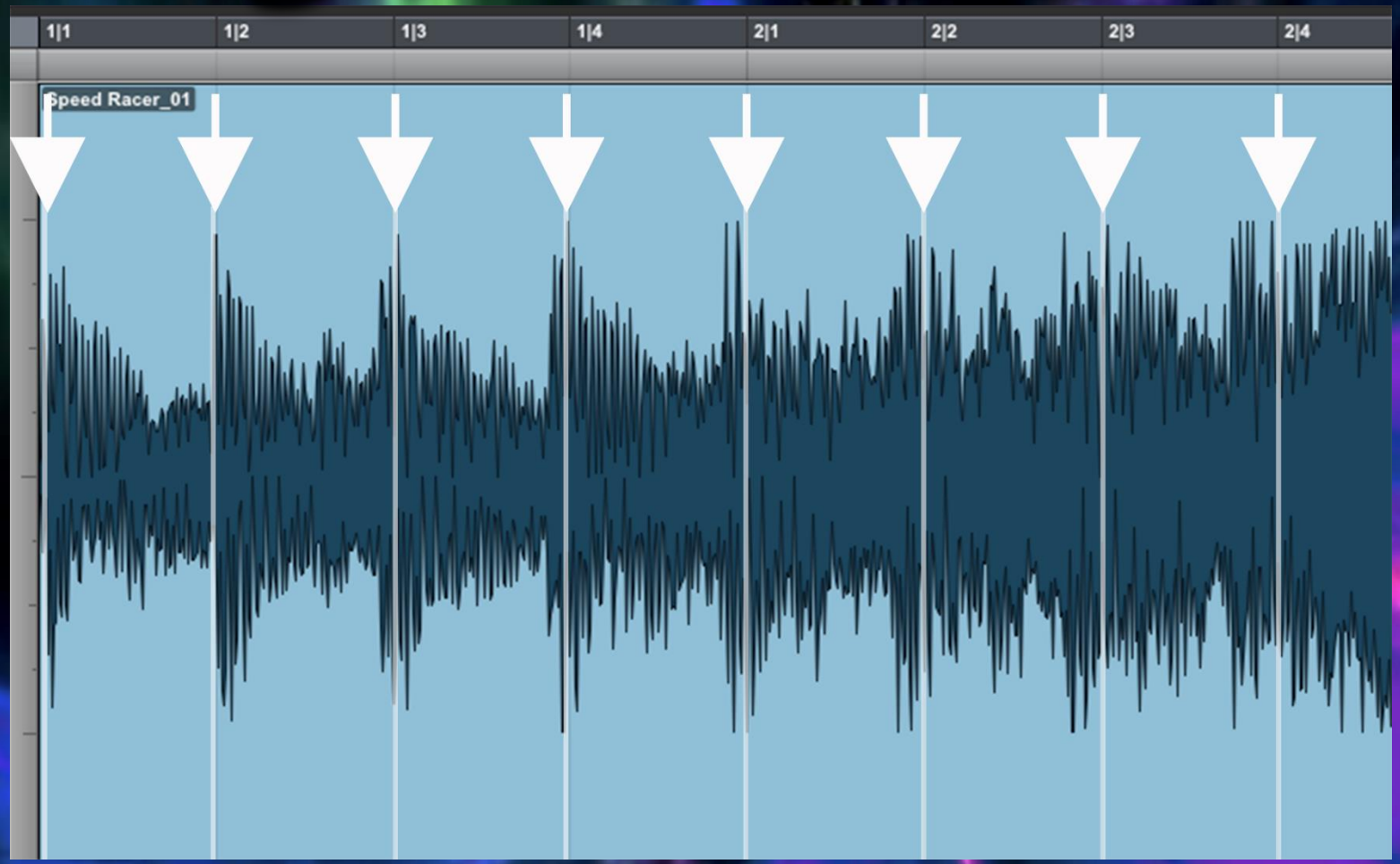



Racing Music
Zone Mode Track
Racing Music Resumes

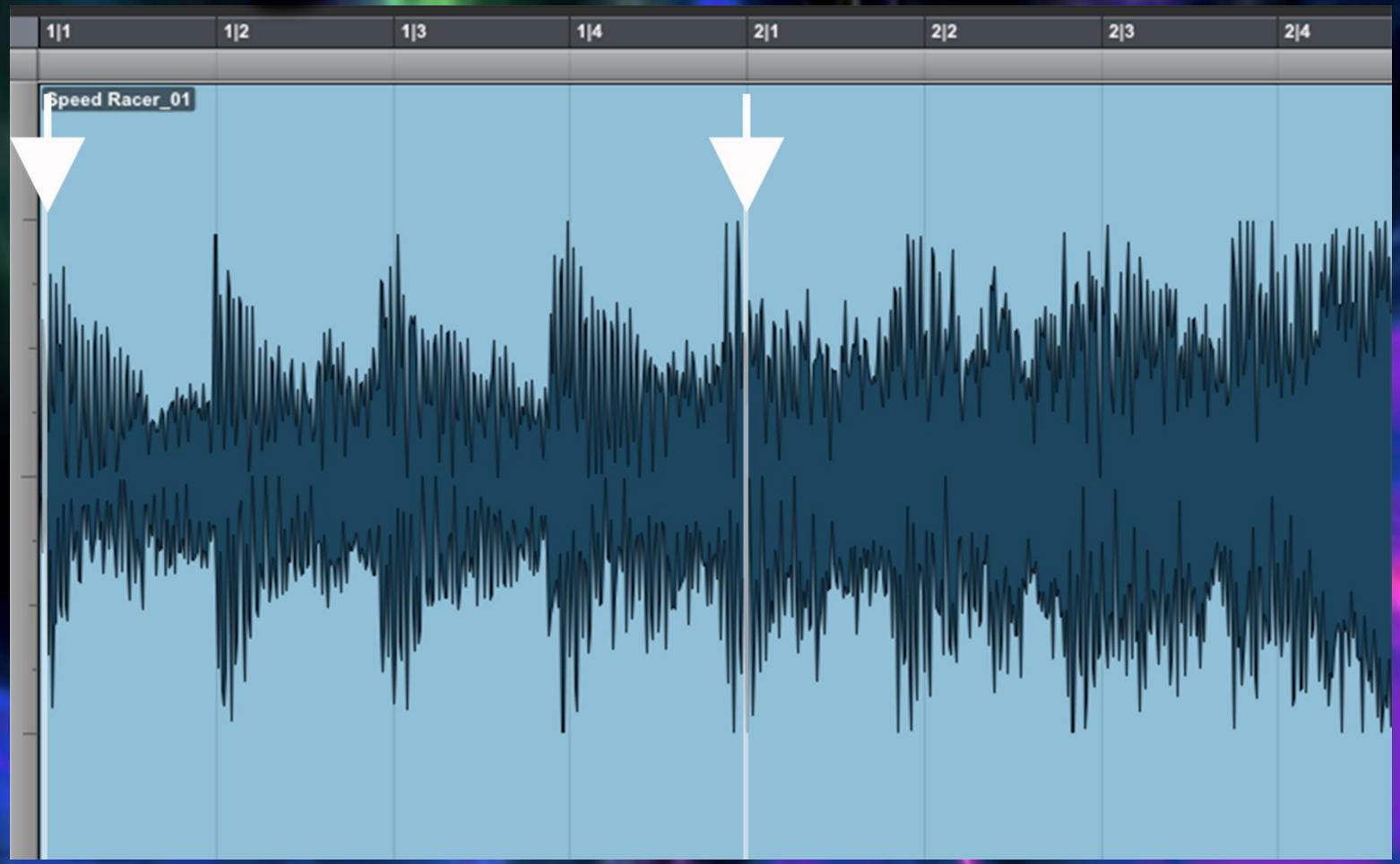
Digital Markers



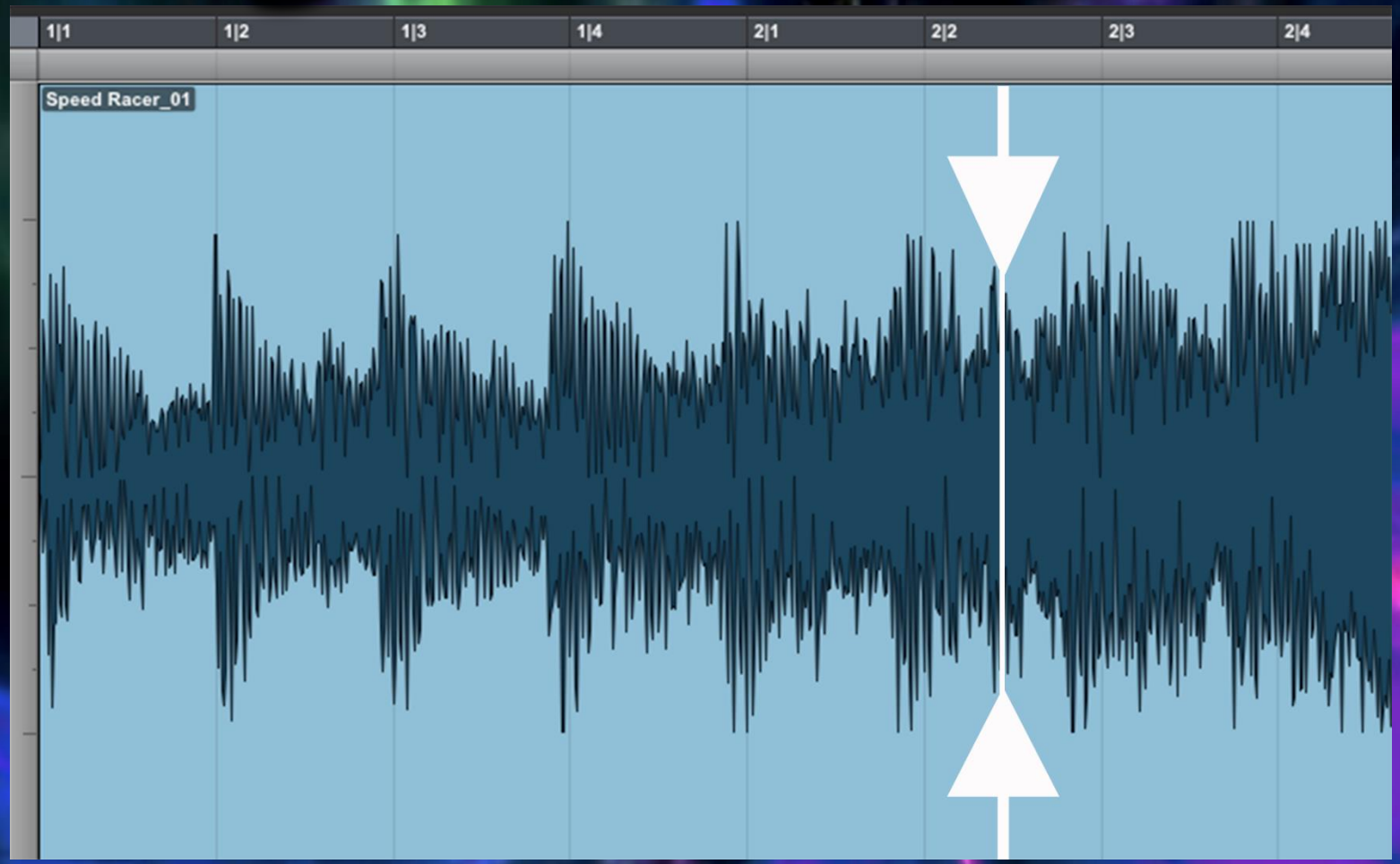
Digital Markers



Digital Markers



Digital Markers

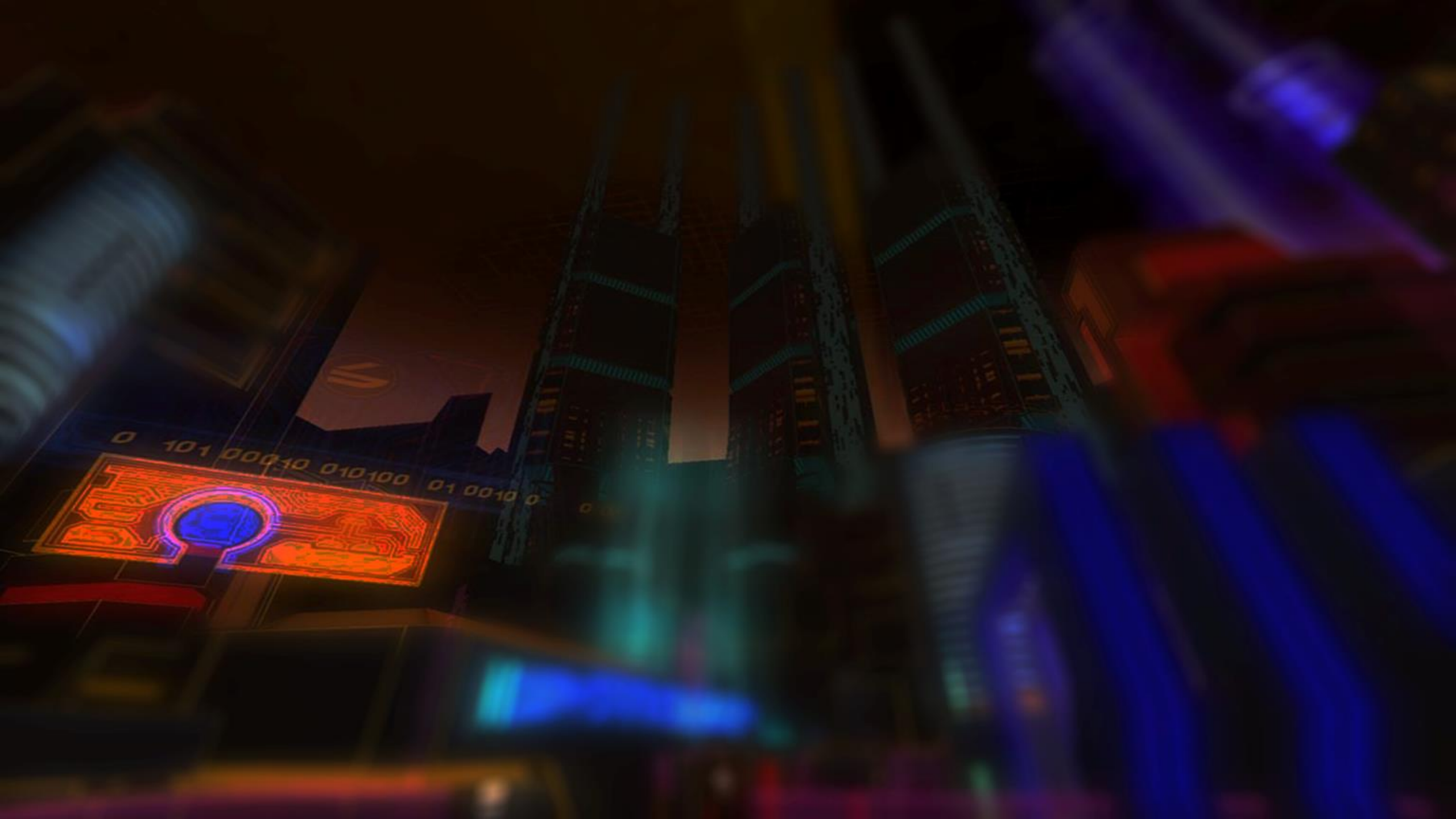


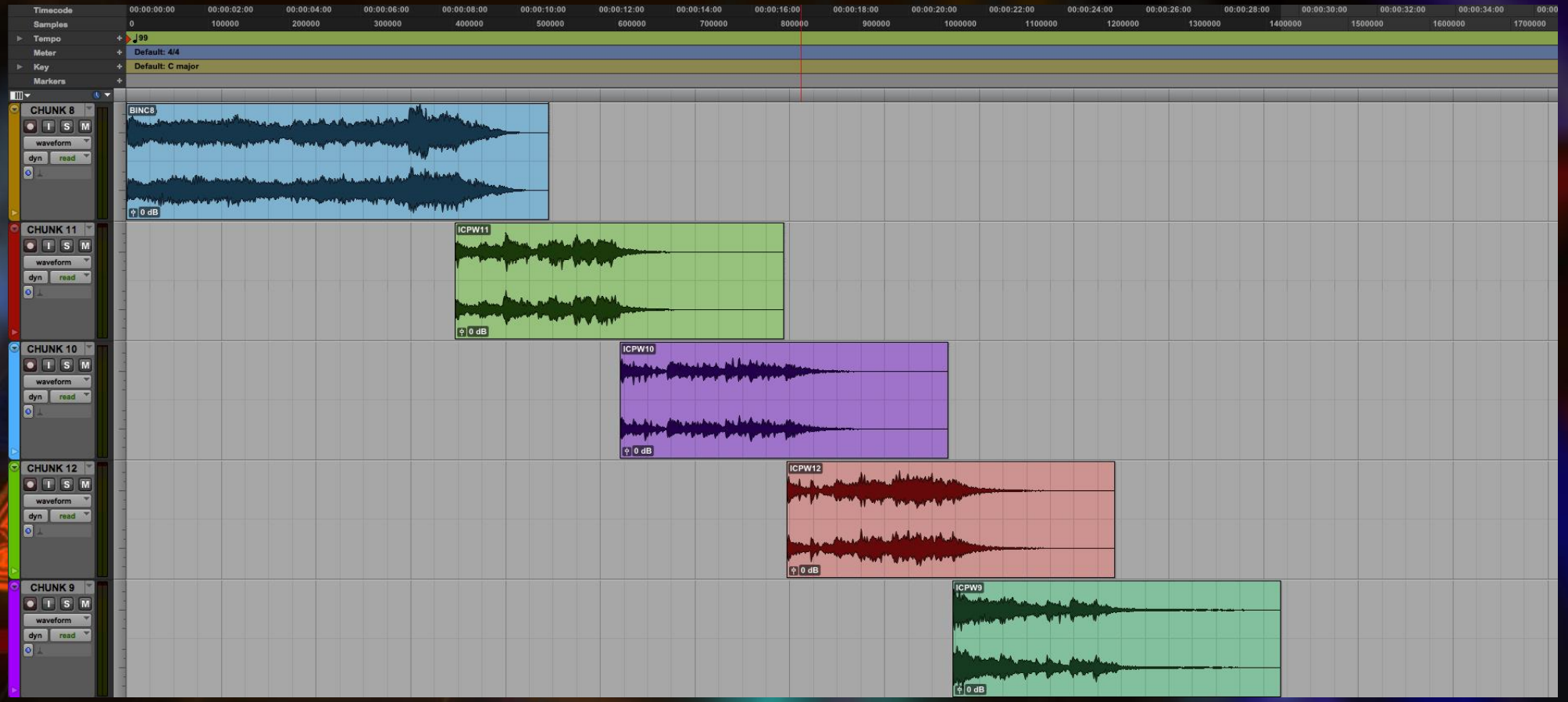

SPEED RACER
THE VIDEOGAME

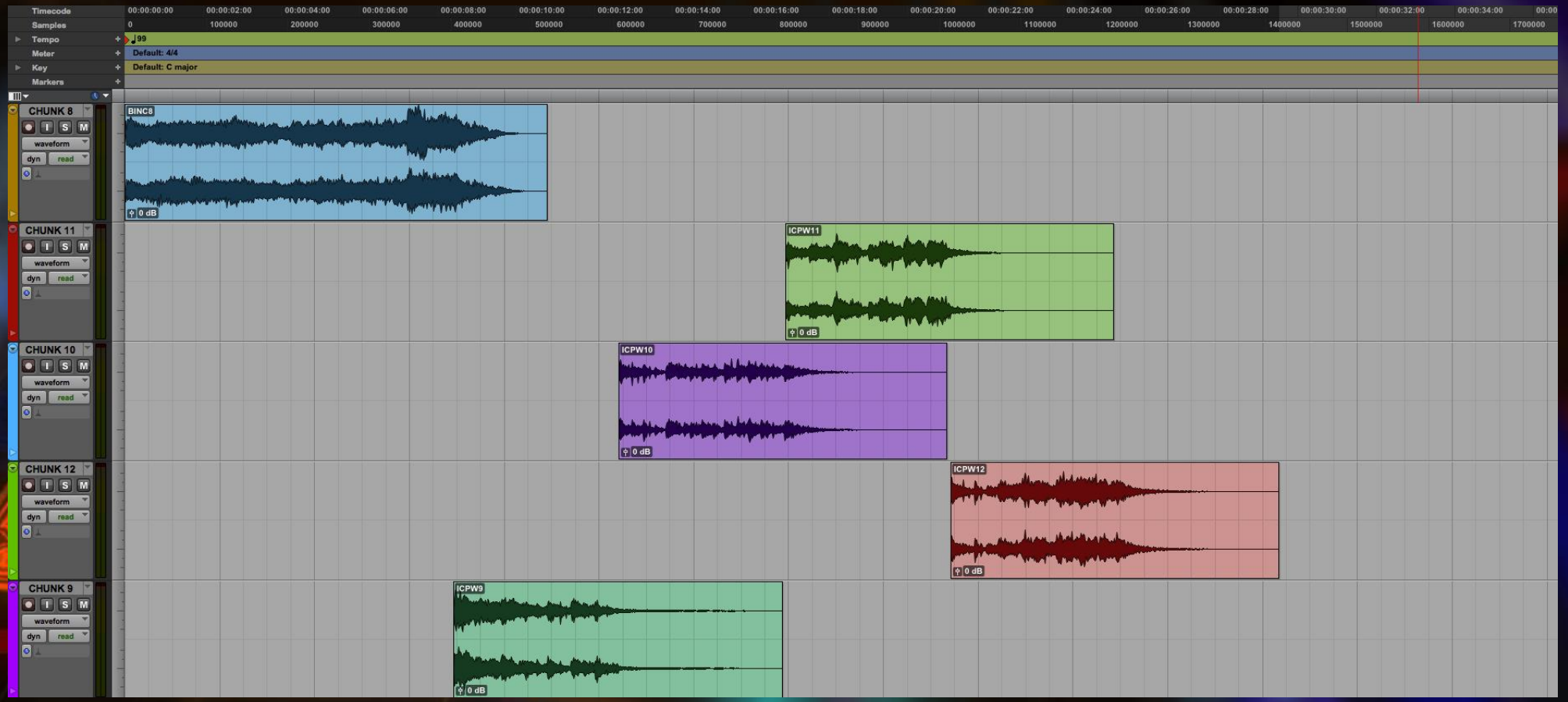

TRON 2.0

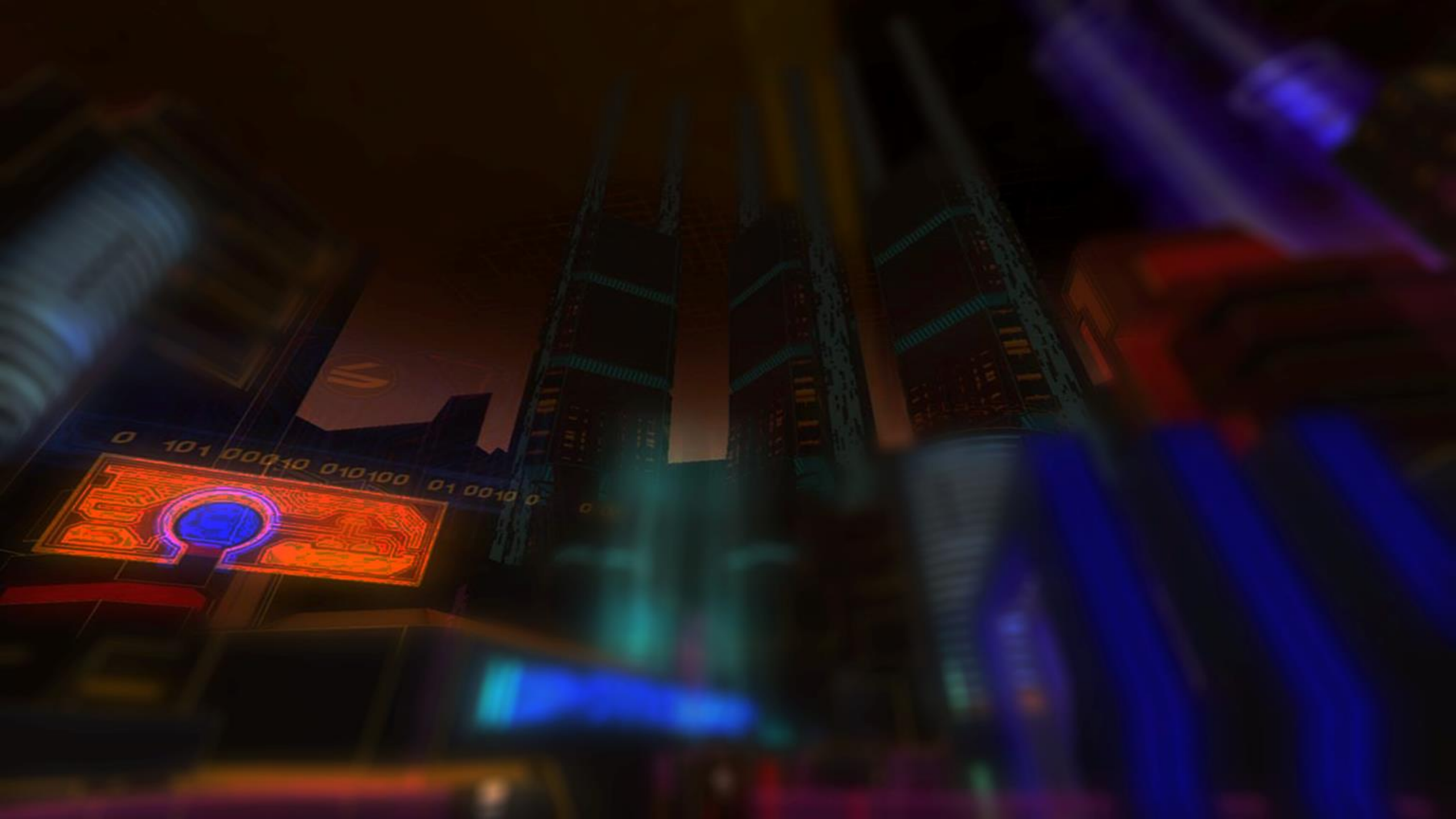

TRON 2.0
Chunk 1
Chunk 2
Chunk 3
Chunk 4
Chunk 5


TRON 2.0
Chunk 1
Chunk 2
Chunk 3
Chunk 4
Chunk 5




Timecode
Samples
Tempo
Meter
Key
Markers
99
Default: 4/4
Default: C major
CHUNK 8
CHUNK 11
CHUNK 10
CHUNK 12
CHUNK 9
waveform
dyn
read
BINC8
ICPW11
ICPW10
ICPW12
ICPW9
0 dB


Timecode
Samples
Tempo
99
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Default: 4/4
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CHUNK 8
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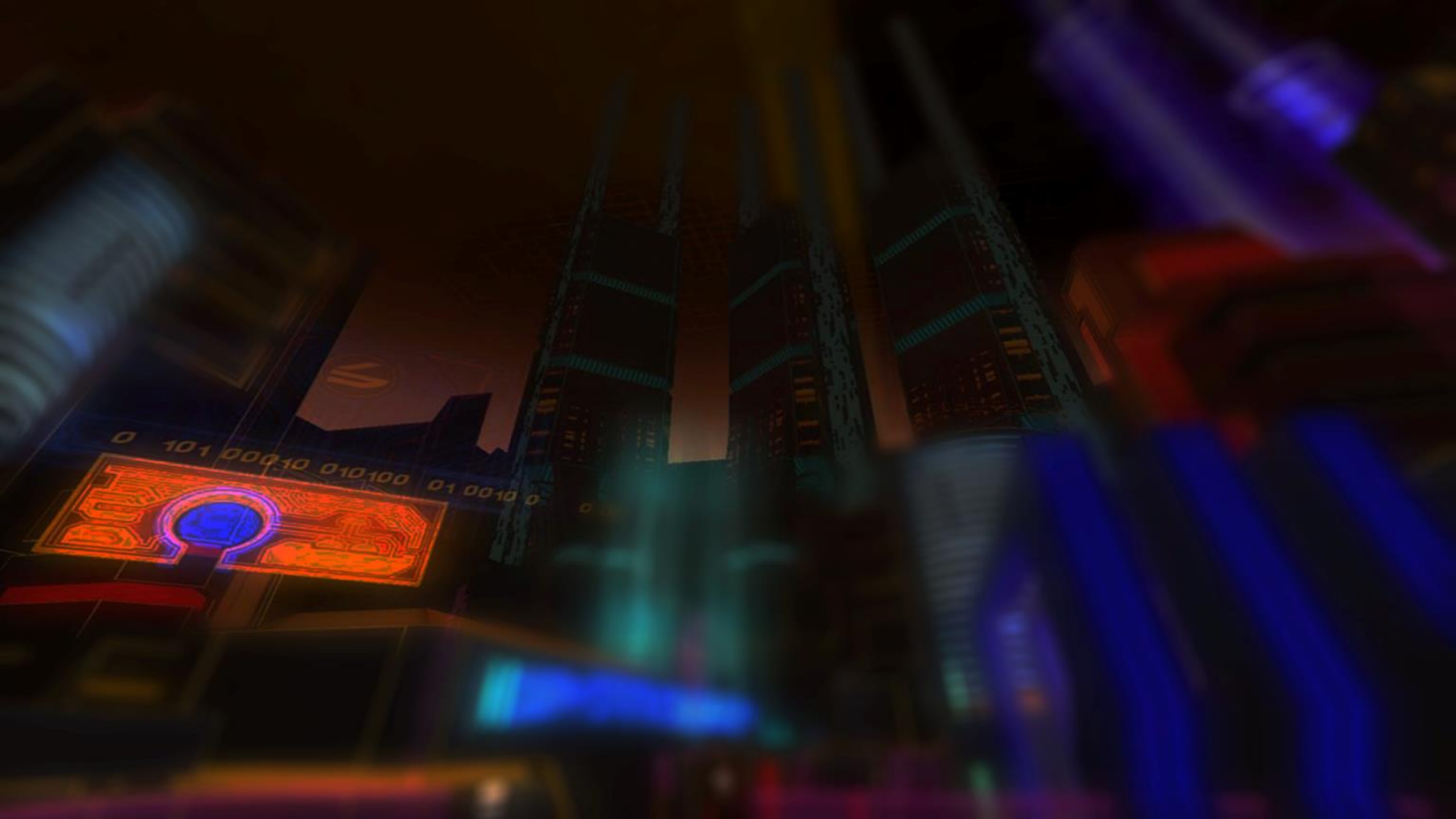


Horizontal Resequencing






Timecode
Samples
Tempo
Meter
Key
Markers
Default: 4/4
Default: C major
CHUNK 8
CHUNK 11
CHUNK 10
CHUNK 12
CHUNK 9
waveform
dyn
read
BINC8
ICPW11
ICPW10
ICPW12
ICPW9
0 dB
SHARE
OPTIONS




AUTO
auto read
no group
100
100
I
S
M
+3.4
dyn
AUTO
auto read
no group
100
100
I
S
M
+6.0
dyn
AUTO
auto read
no group
100
100
I
S
M
+4.4
dyn
AUTO
auto read
no group
100
100
I
S
M
-3.4
dyn
AUTO
auto touch
no group
100
100
I
S
M
+5.4
dyn
AUTO
auto touch
no group
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S
M
+1.4
dyn

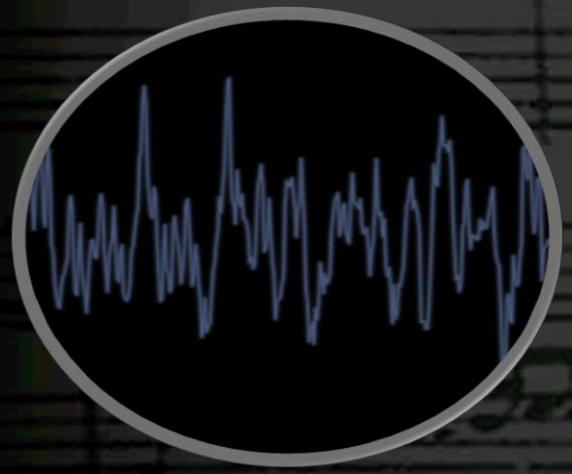
Mixing



Mixing

- ✓ Consistent volume
- ✓ Smooth transitions

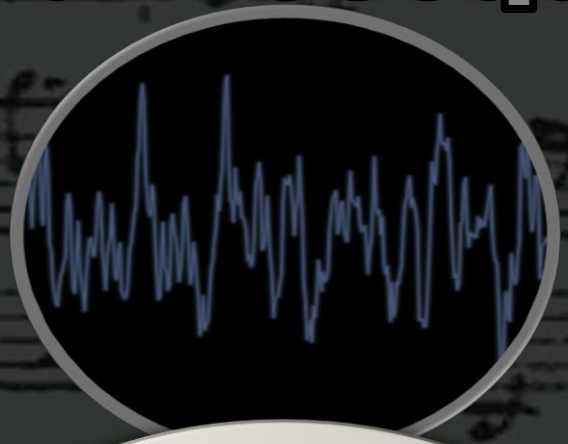
Horizontal Resequencing

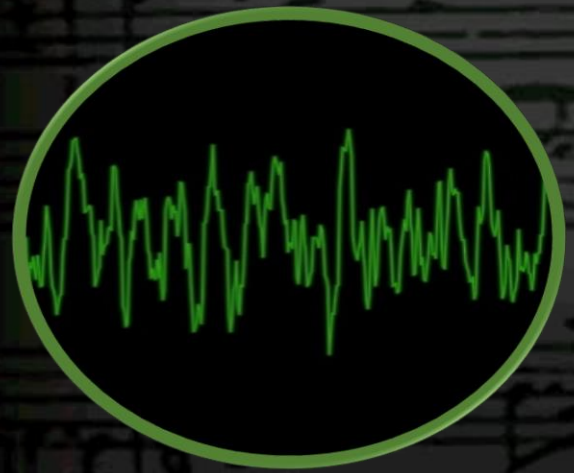






Horizontal Resequencing?

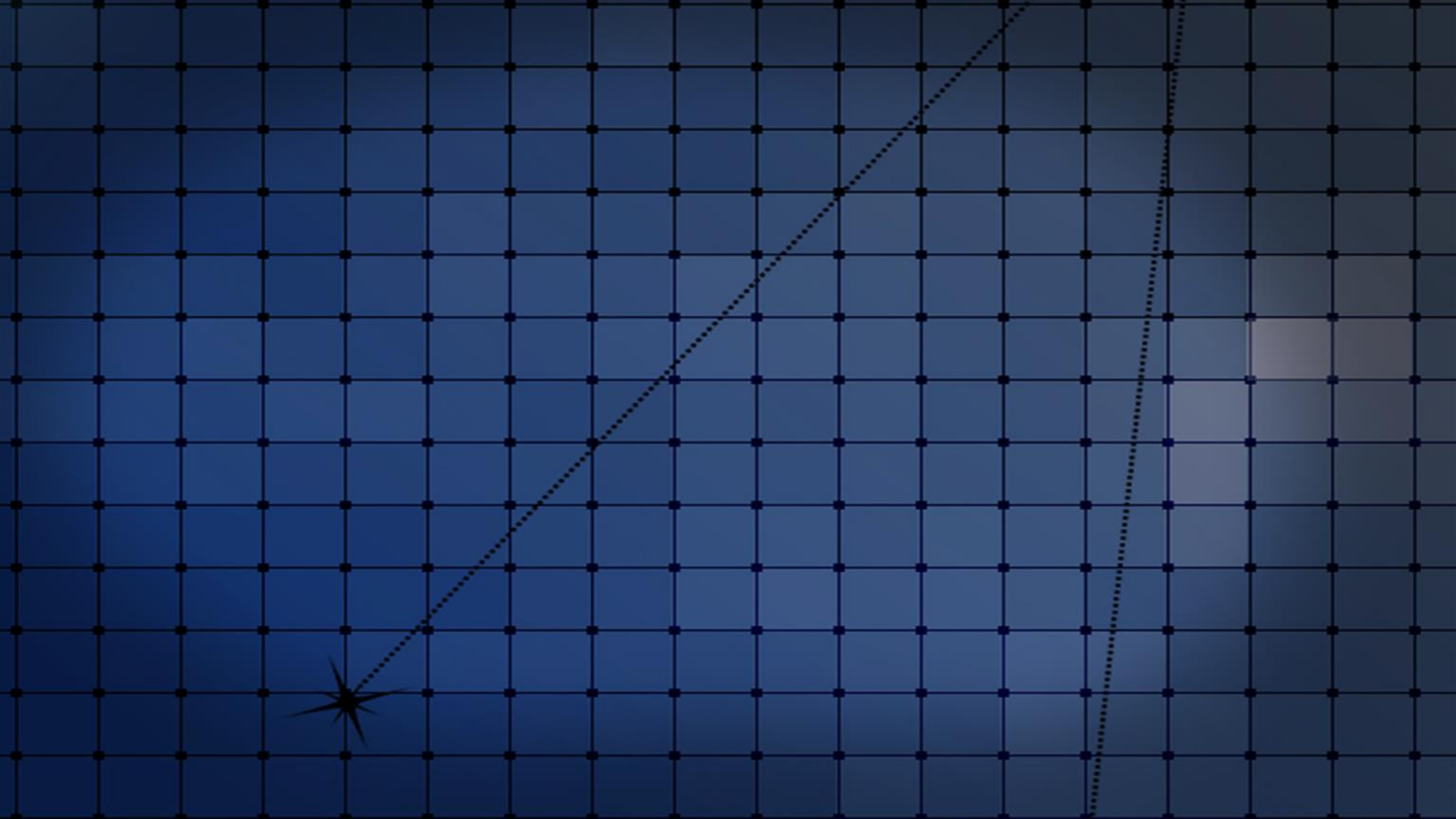









LUMINES
PUZZLE FUSION





SHININ'

By Mondo Grosso



SHININ'

By Mondo Grosso

- Repeating patterns useful for music system



SHININ'

By Mondo Grosso

- Repeating patterns useful for music system
- Short sections looped by the game

SHININ' By Mondo Grosso

Lyrics

SHININ' By Mondo Grosso

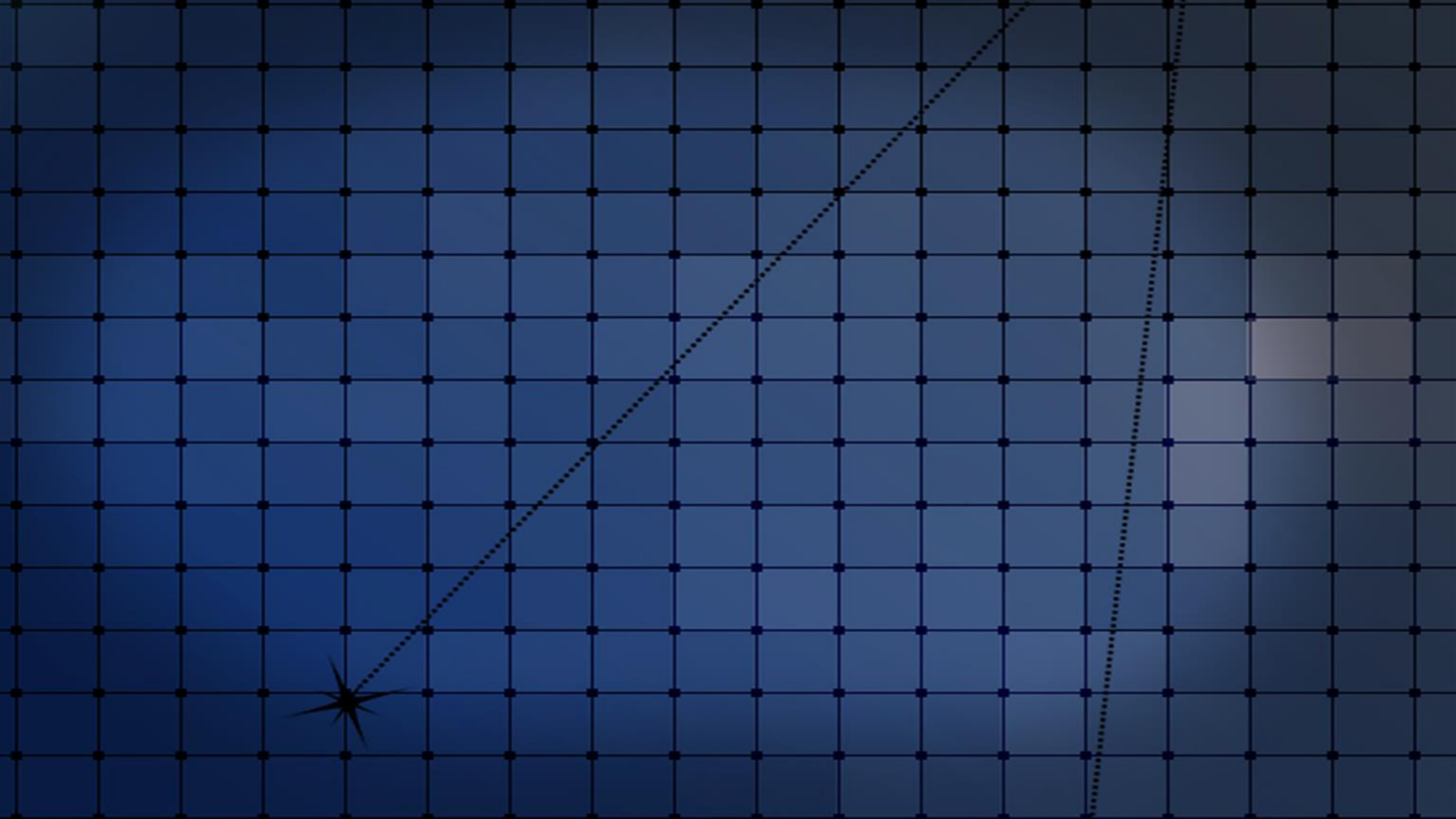
Lyrics

"World of Silence
Creepin' Sightless Time"

SHININ' By Mondo Grosso

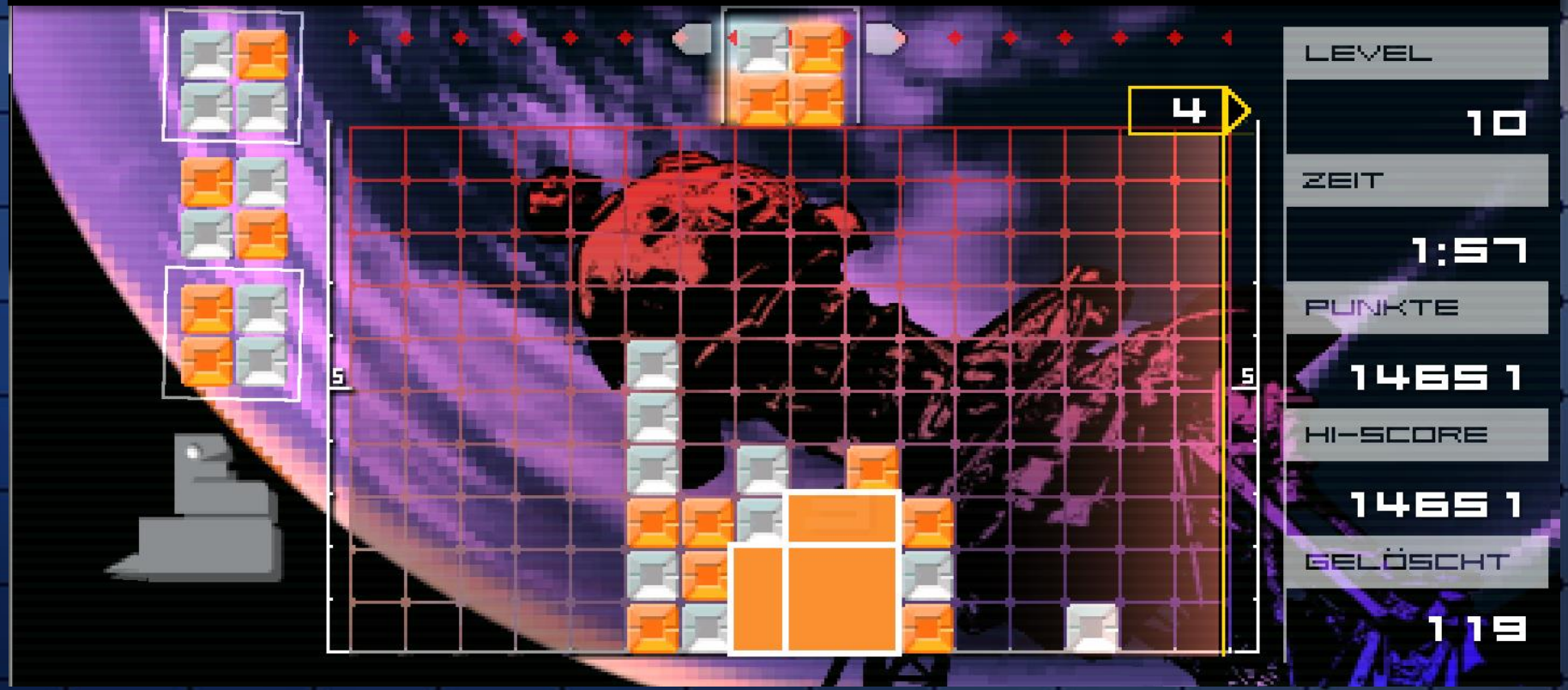
Lyrics

"Port of Sadness, Sleepin' Flightless Mind"



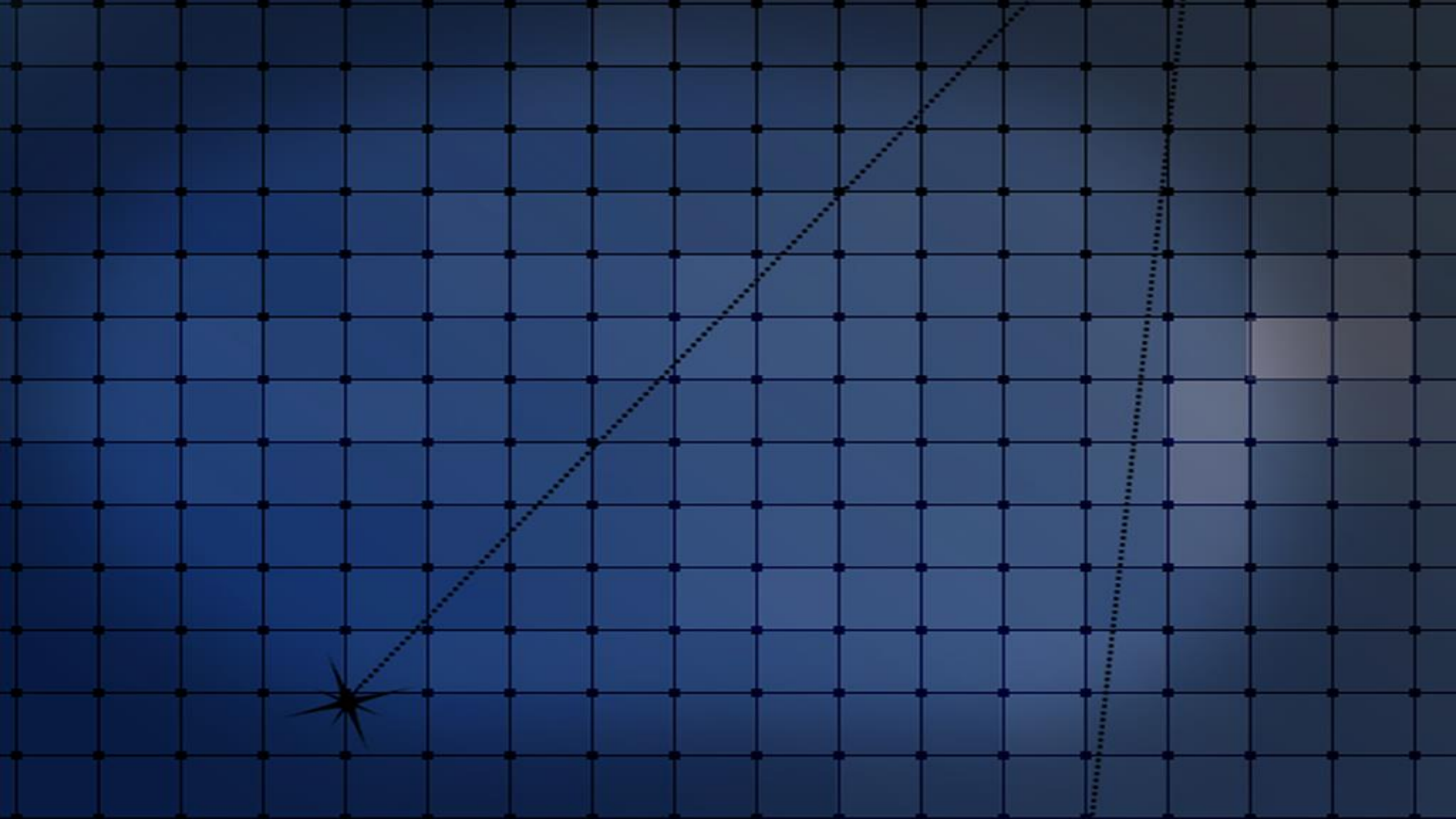
LUMINES

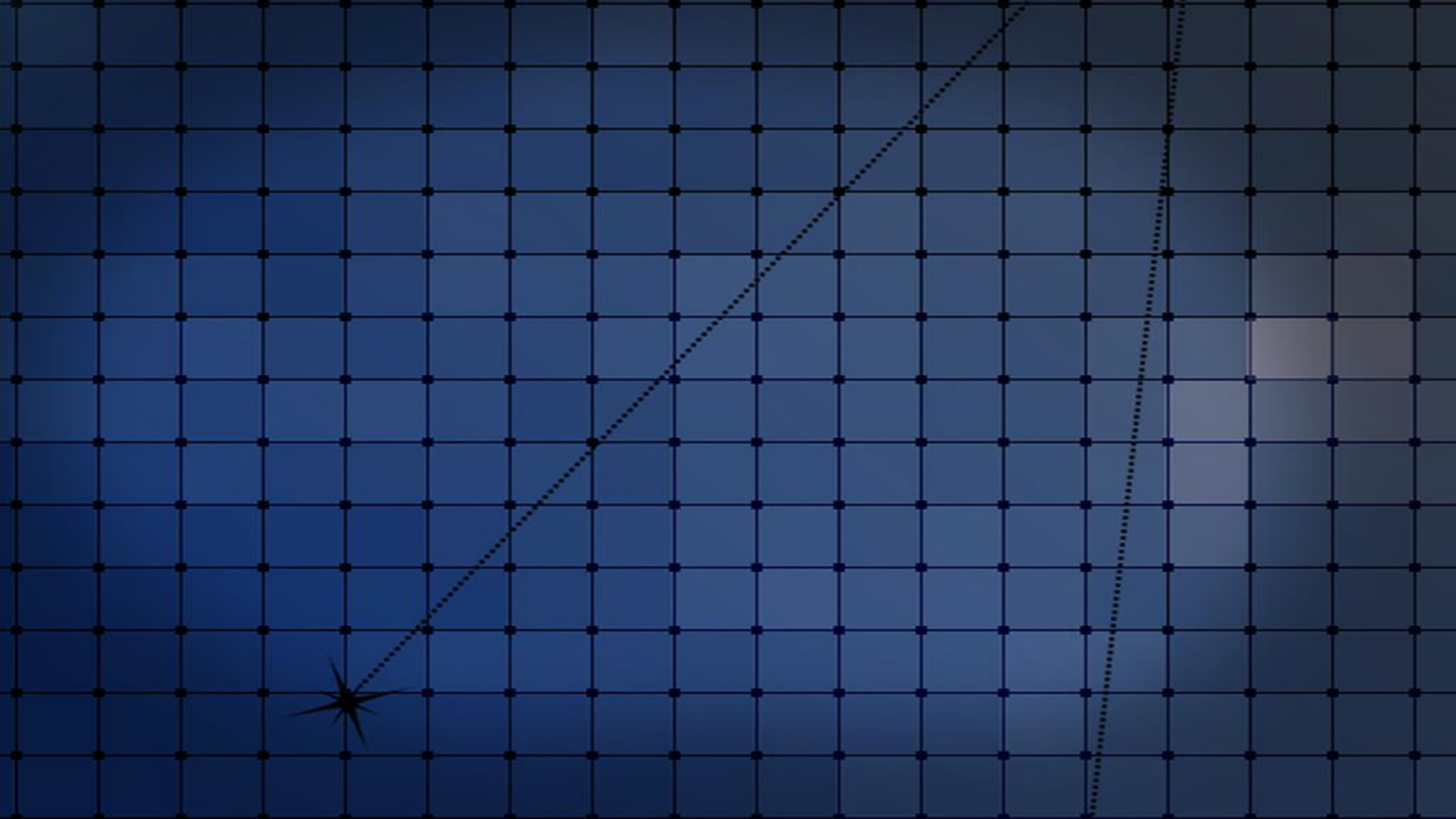
PUZZLE FUSION





“World of Silence Creepin’ Sightless Time”





Horizontal Resequencing



INTERACTIVE MUSIC



Recorded Music

- ✓ Horizontal Resequencing
- ✓ Vertical Layering

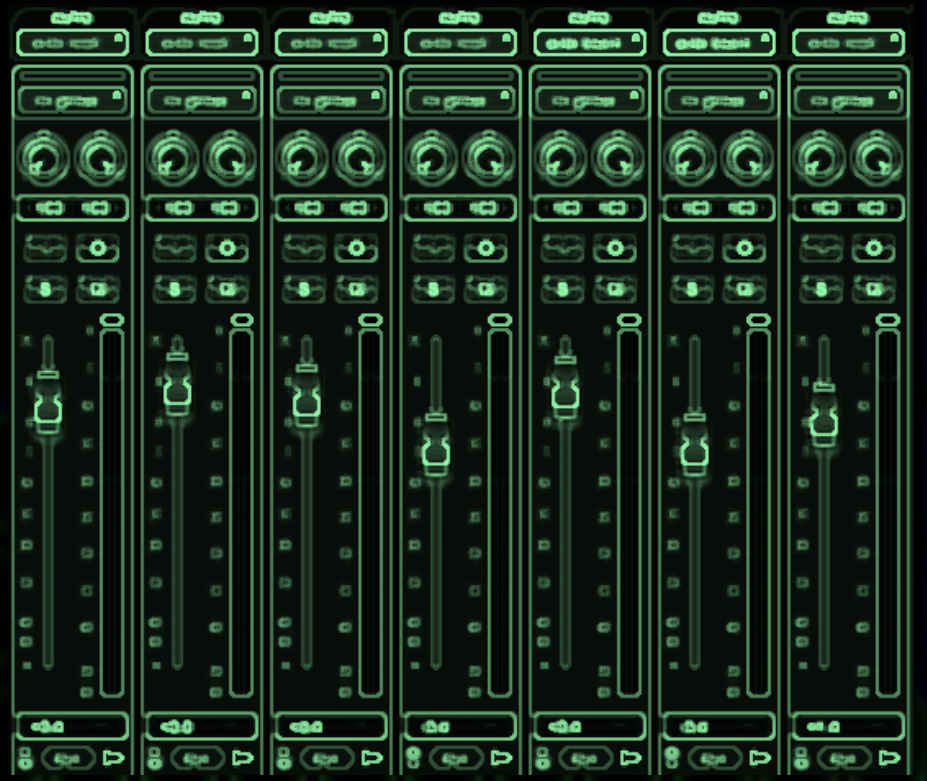
INTERACTIVE MUSIC



Recorded Music

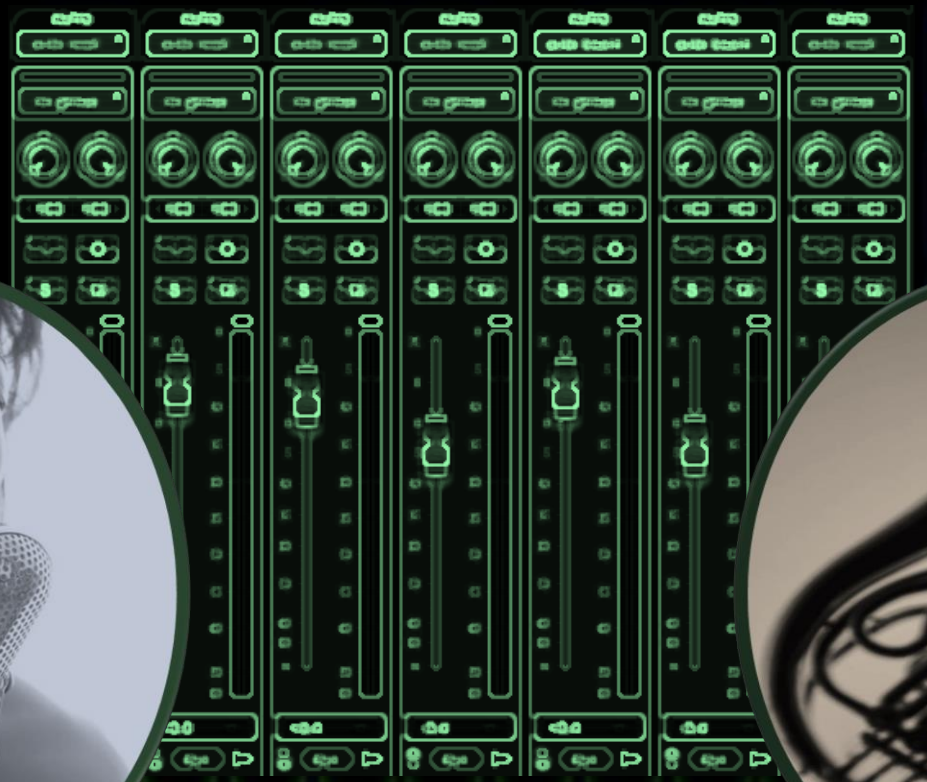
- ✓ Horizontal Resequencing
- ✓ Vertical Layering

STEM MIXING



STEM MIXING







STEM MIXING



STEM MIXING

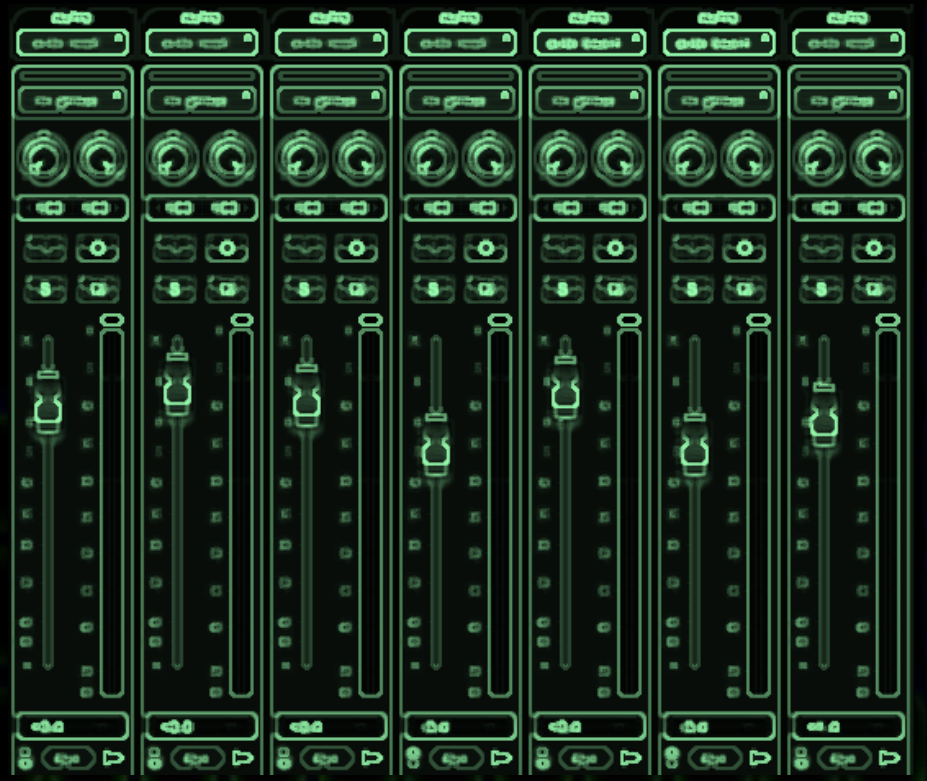




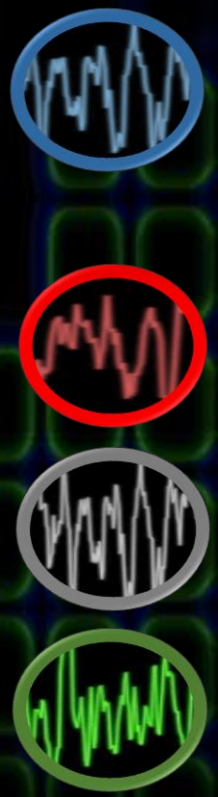




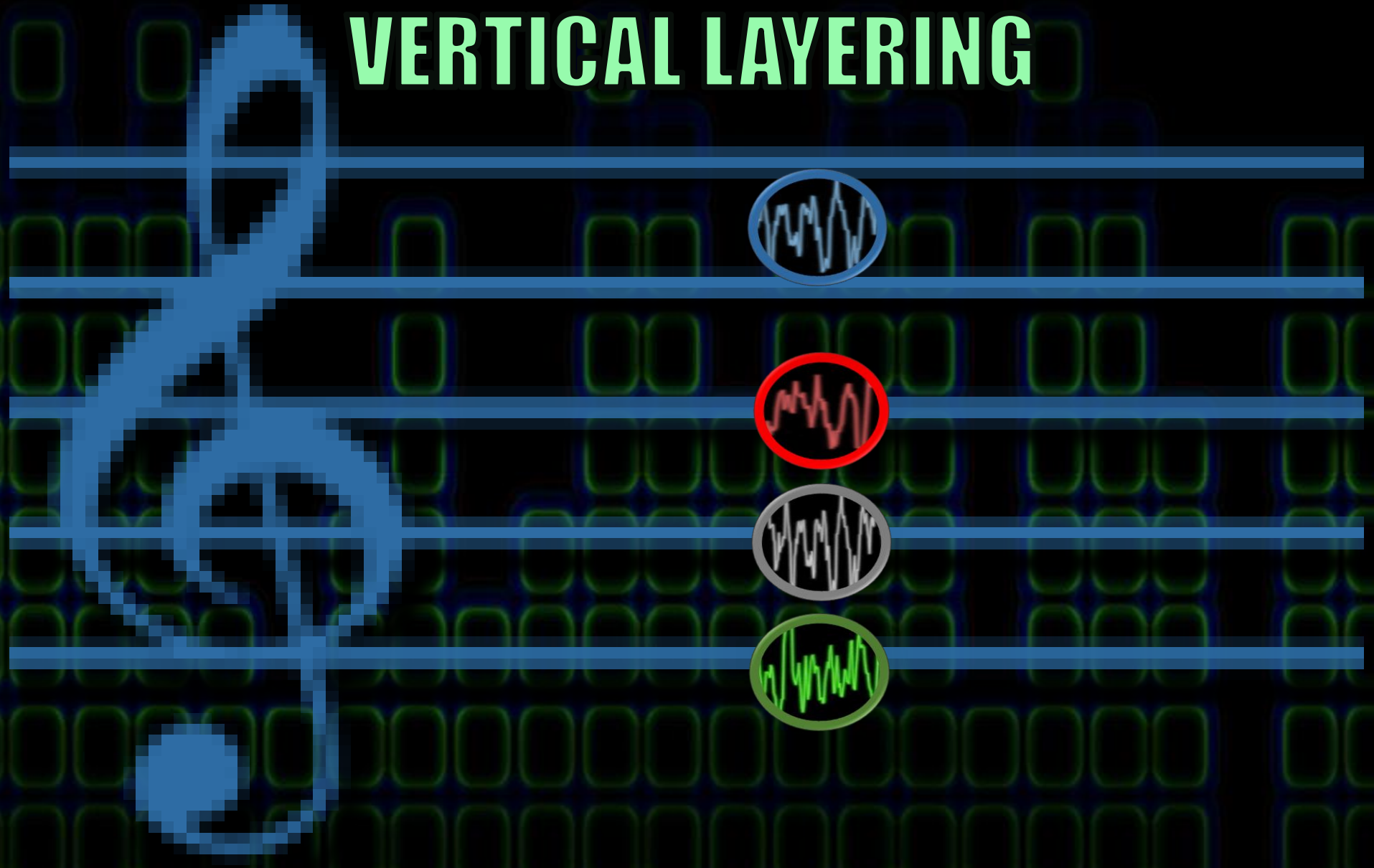
VERTICAL LAYERING



VERTICAL LAYERING



VERTICAL LAYERING



VERTICAL LAYERING



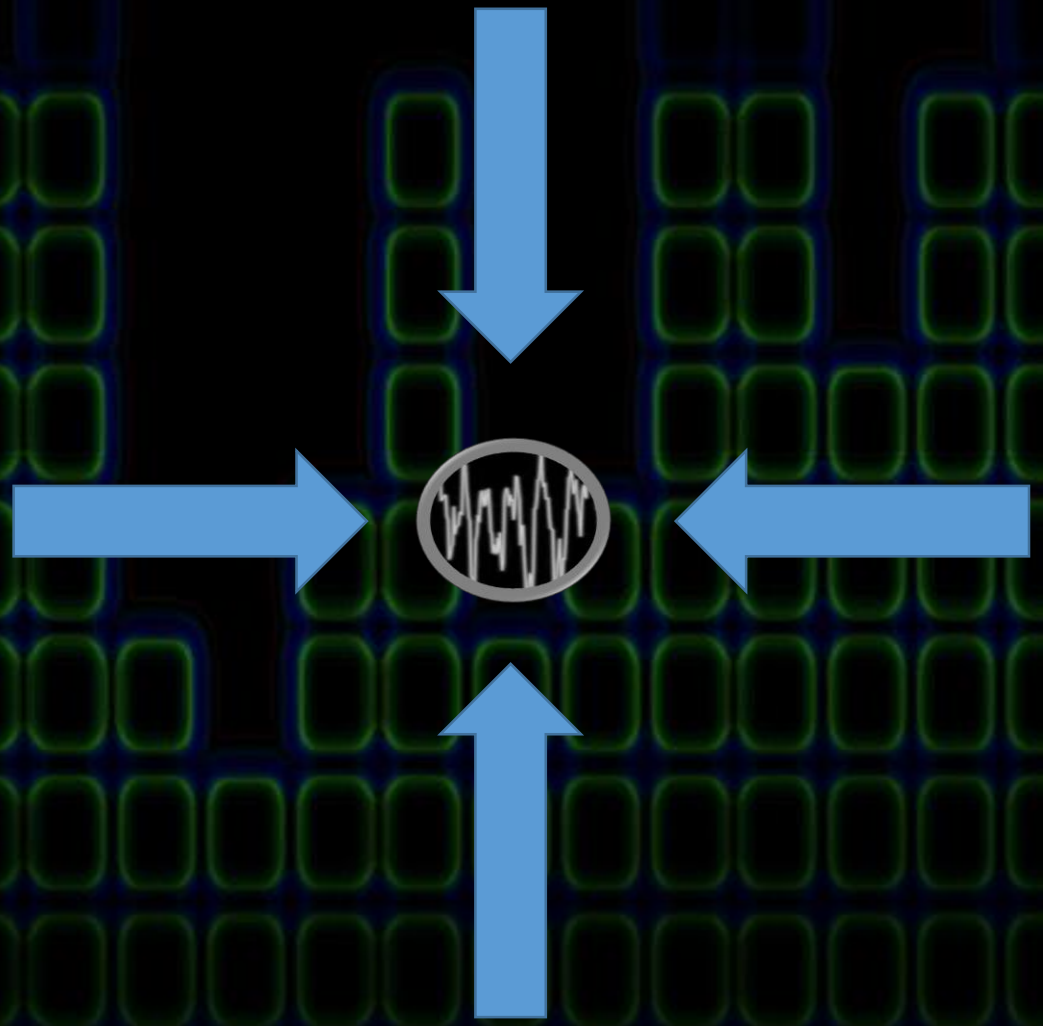
- Virtual Mixing Engineer

VERTICAL LAYERING

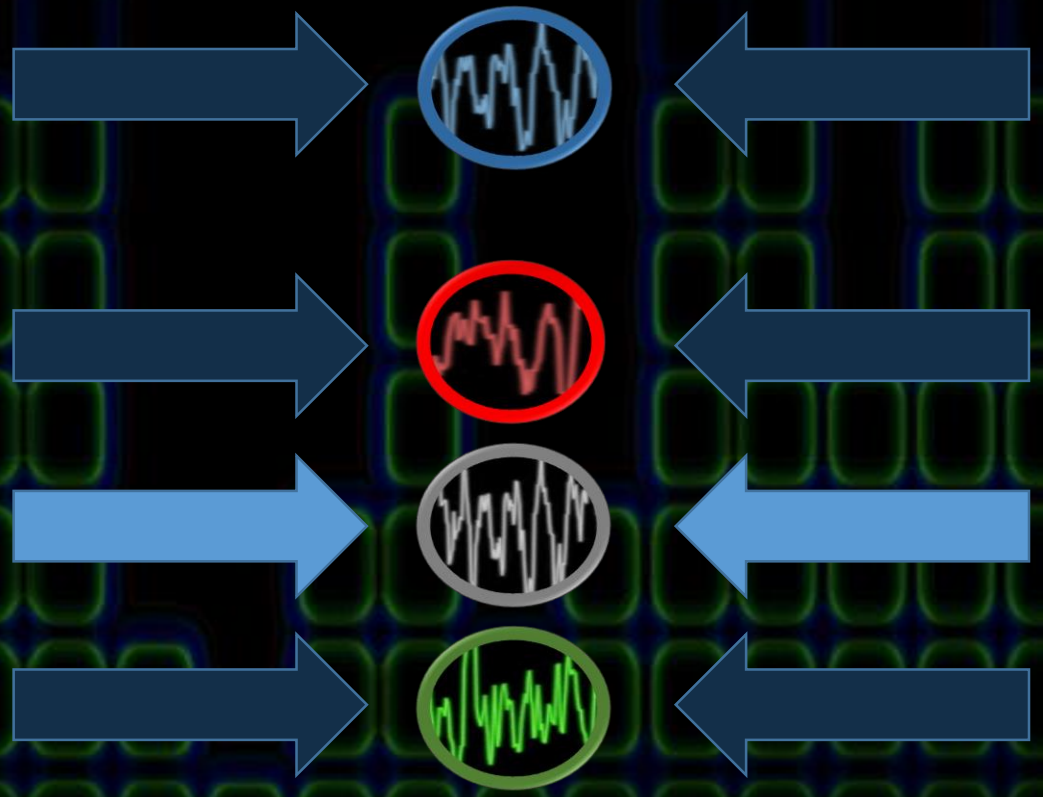


- Virtual Mixing Engineer
- Triggering Points

VERTICAL LAYERING



VERTICAL LAYERING




LittleBIG
Planet™
2


LittleBIG
Planet™
2


LittleBIG Planet™ 2
Full Mix
All Six Layers

LittleBIG Planet™ 2



Drum Layer

LittleBIGPlanet™2



Cute Layer

LittleBIG Planet™ 2



Choir Layer


LittleBIG Planet™ 2
Strings Layer

LittleBIG Planet™ 2

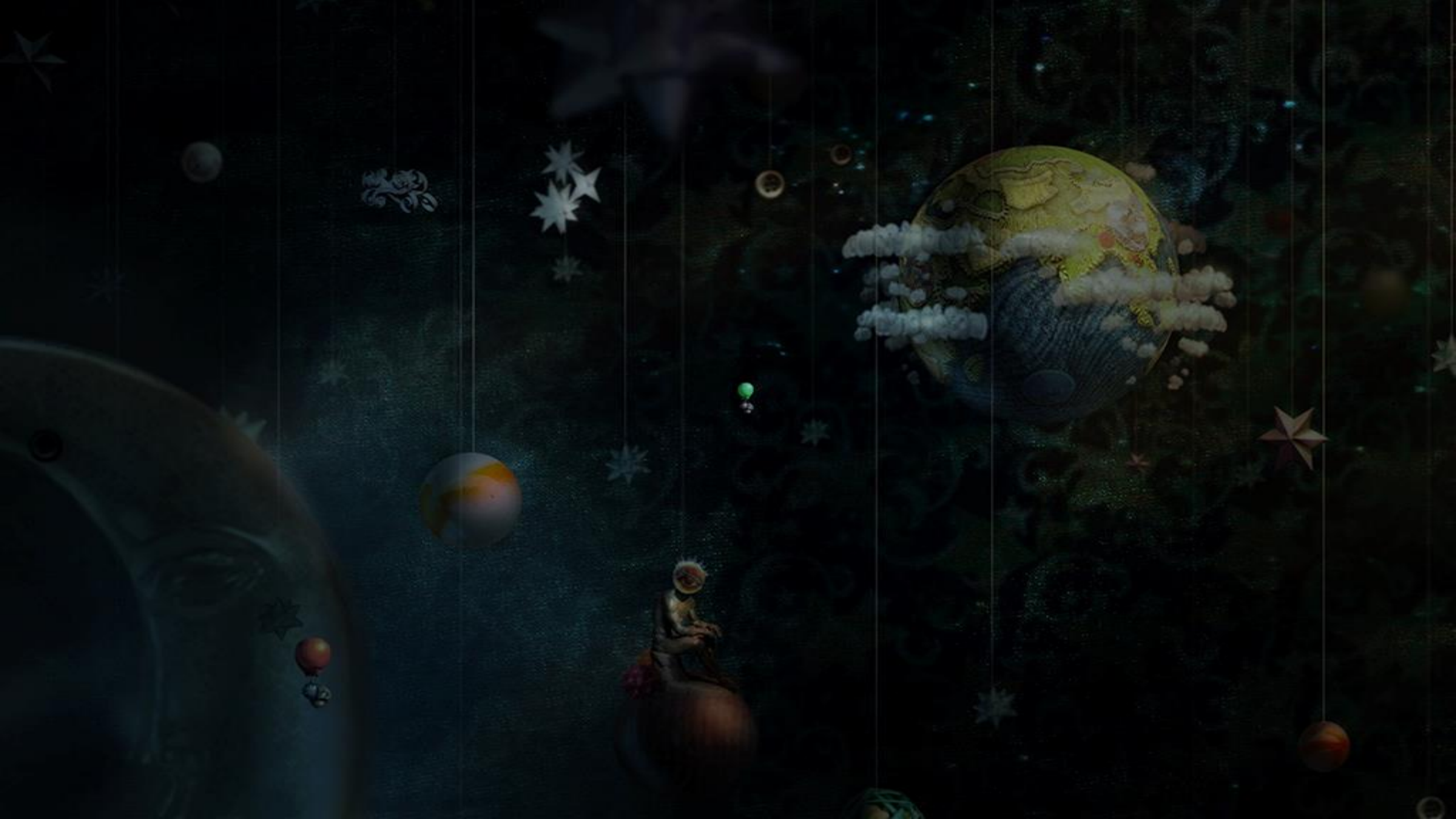


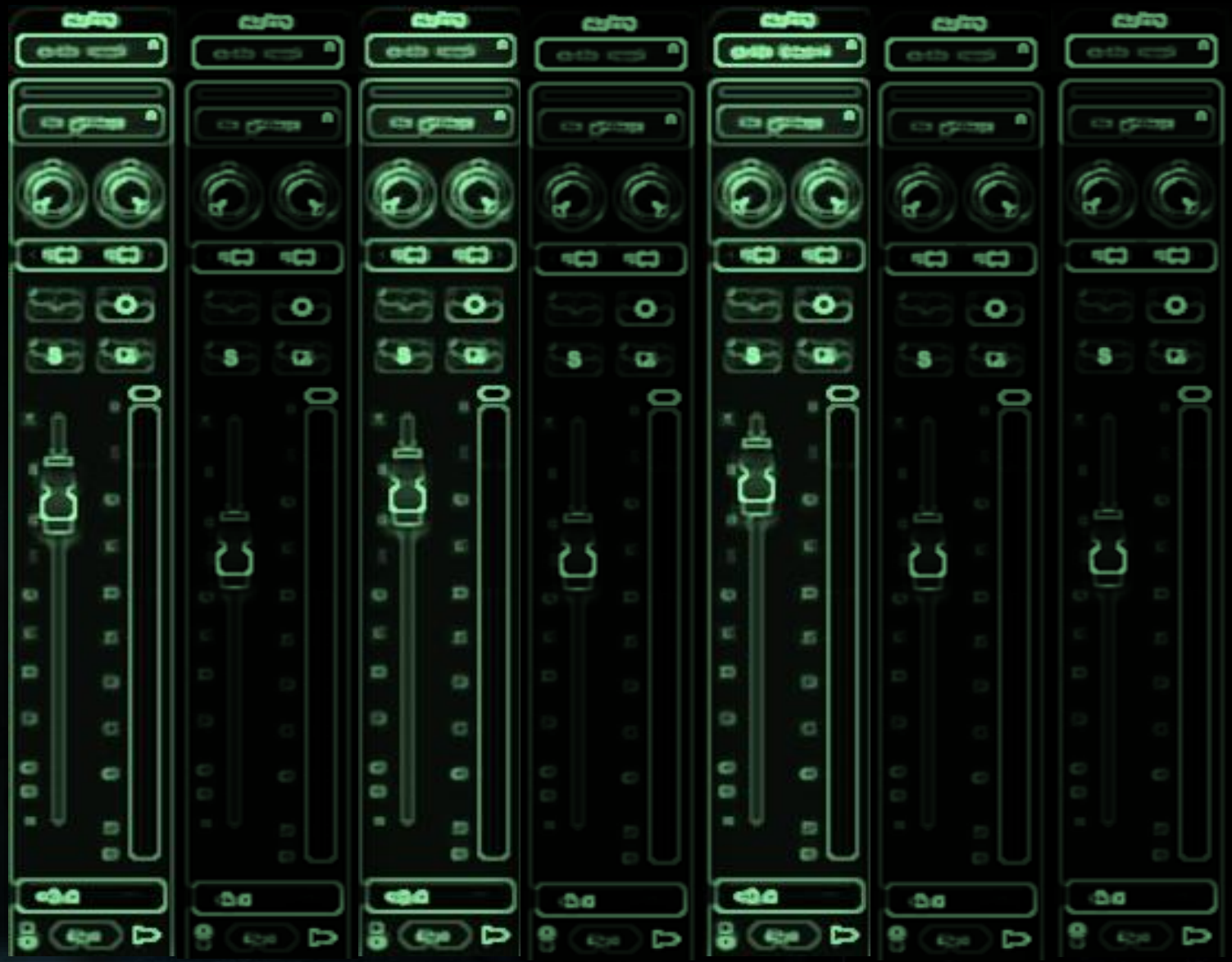
Diva Layer


LittleBIG Planet™ 2
Guitars Layer


LittleBIG
Planet™
2



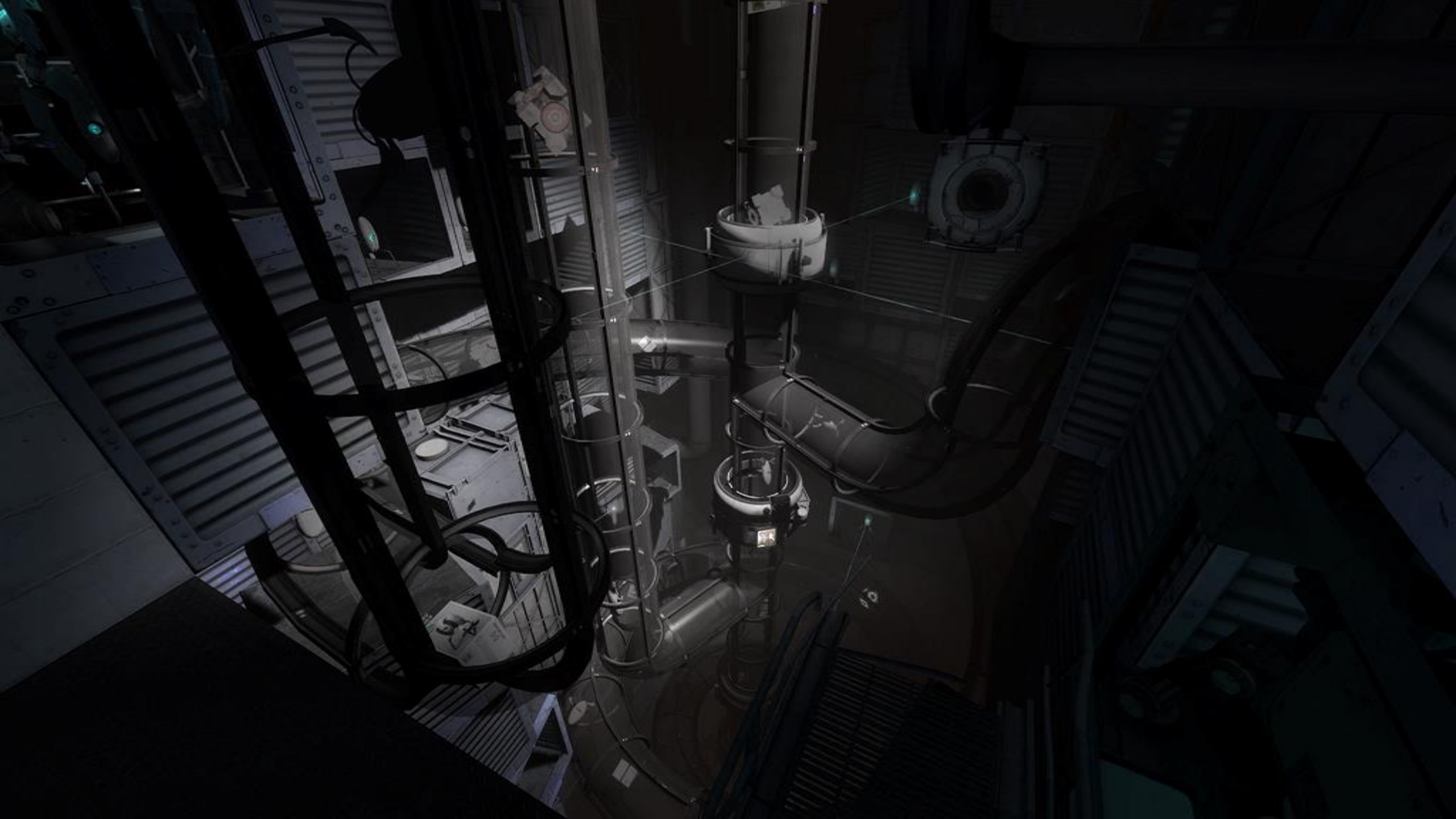





PORTAL 2


PORTAL 2
Slow Layer


PORTAL 2
Fast Layer



Vertical Layering



- ✓ Additive
- ✓ Interchange

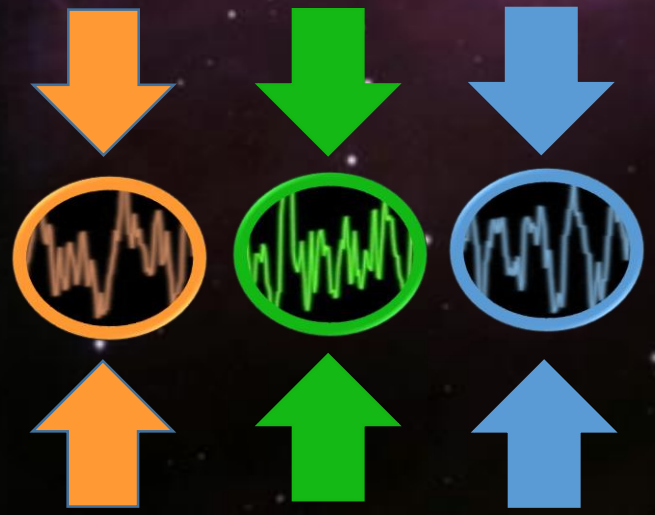
Vertical Layering

- ✓ Additive




THE
MAW







Comedy Layer



Explore
Layer



Epic Layer

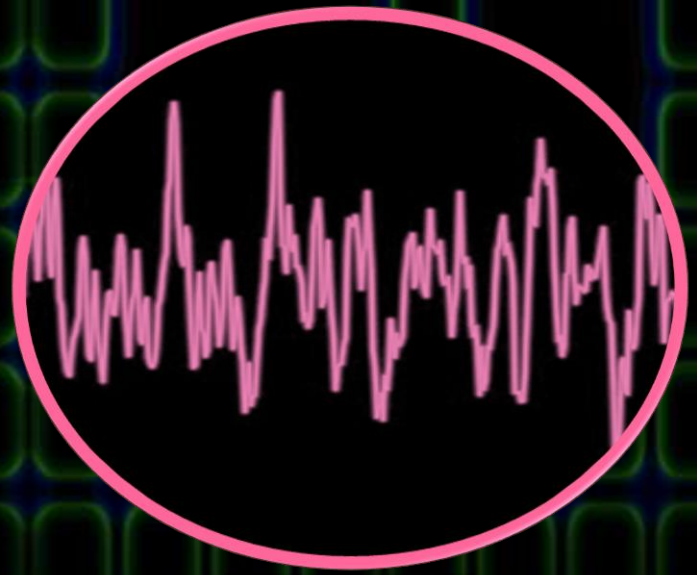


Vertical Layering



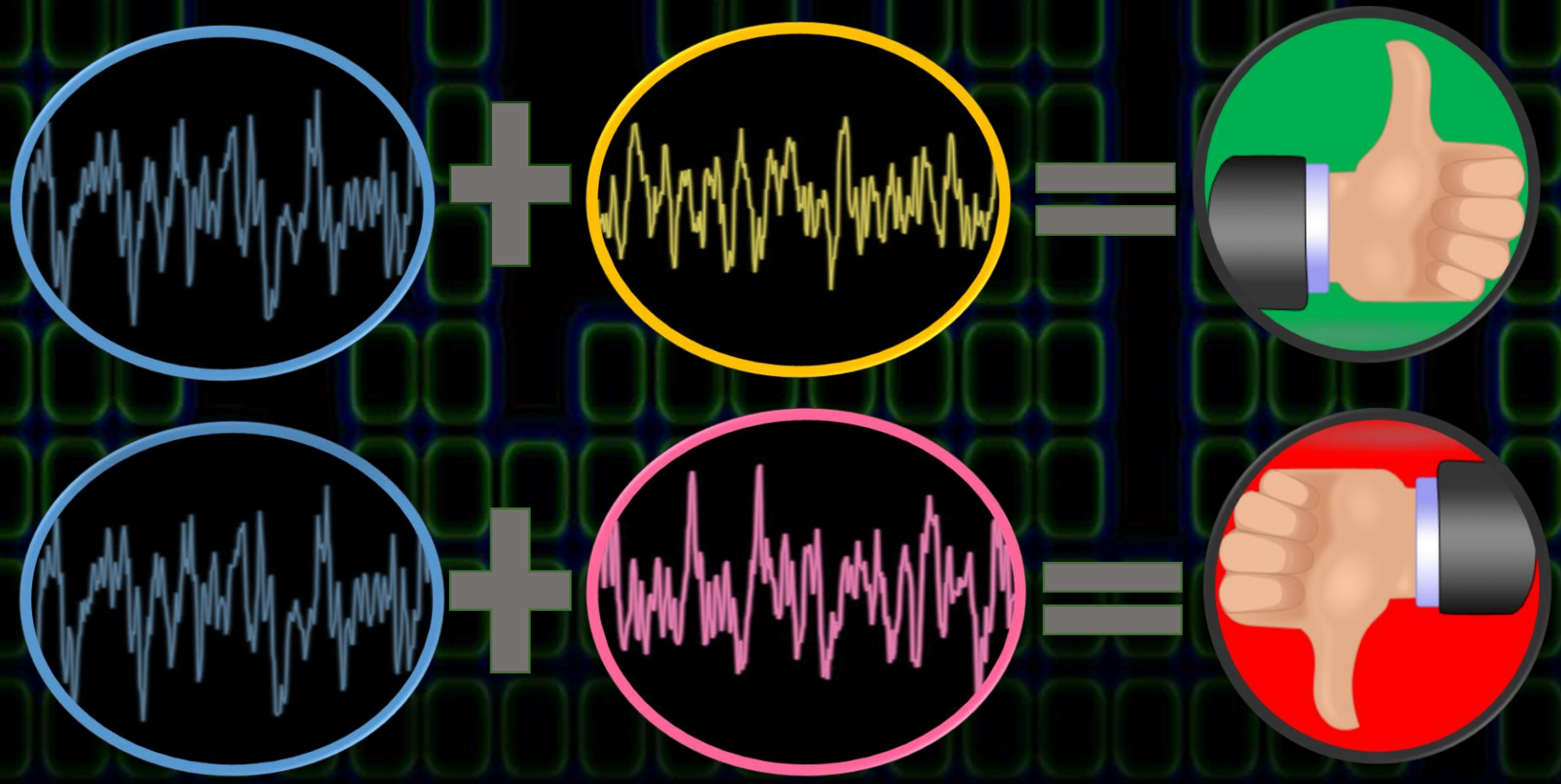
- ✓Additive
- ✓Interchange

Vertical Layering



✓Interchange

Interchange Method




SPORE™
HERO





Main Menu

Battle Mode

Sporepedia


Main Menu
Battle Mode
Sporepedia


Main Menu
Battle Mode
Sporepedia

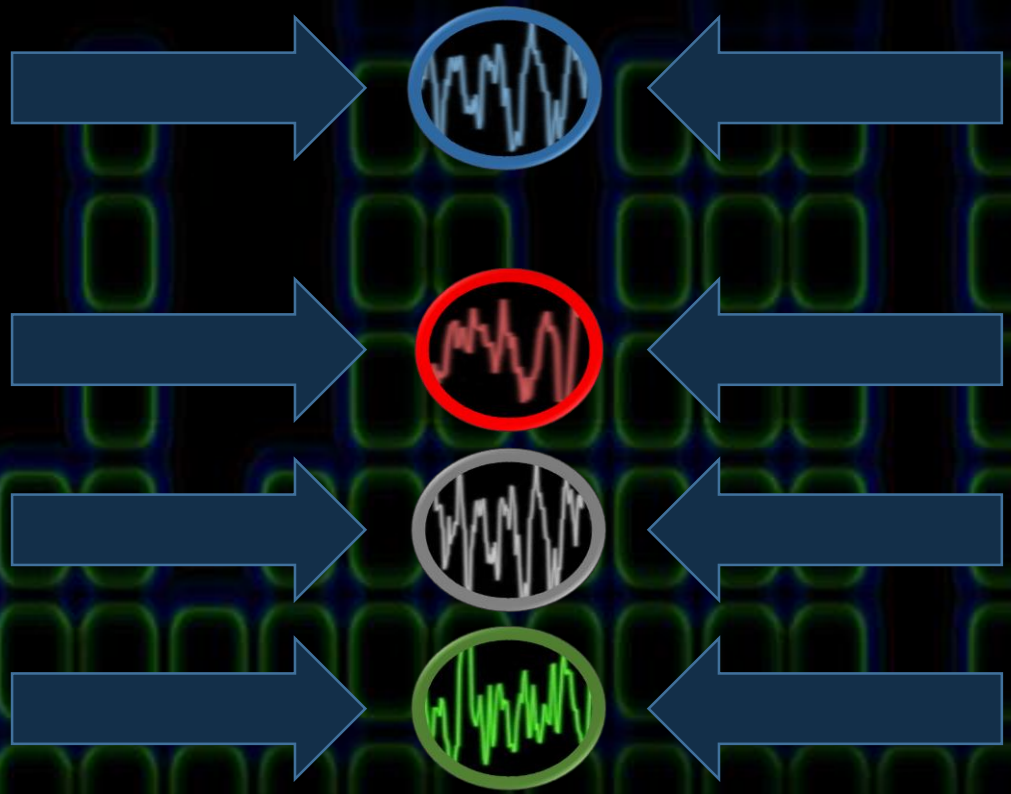

Main Menu
Battle Mode
Sporepedia


Main Menu
Battle Mode
Sporepedia





VERTICAL LAYERING

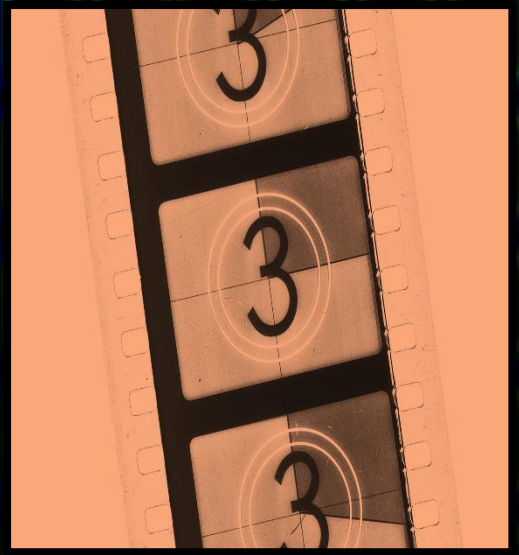


VERTICAL LAYERING?



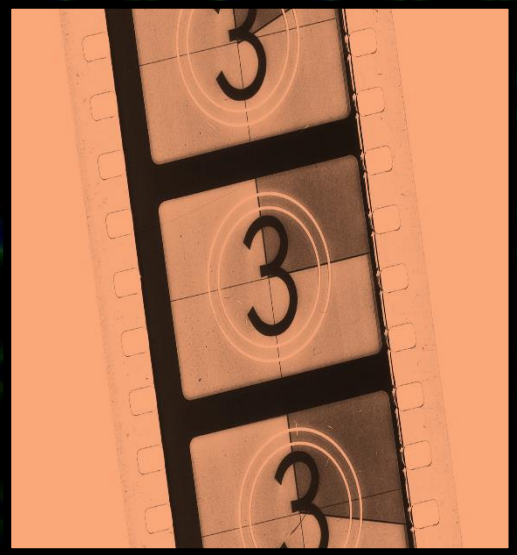
VERTICAL LAYERING?



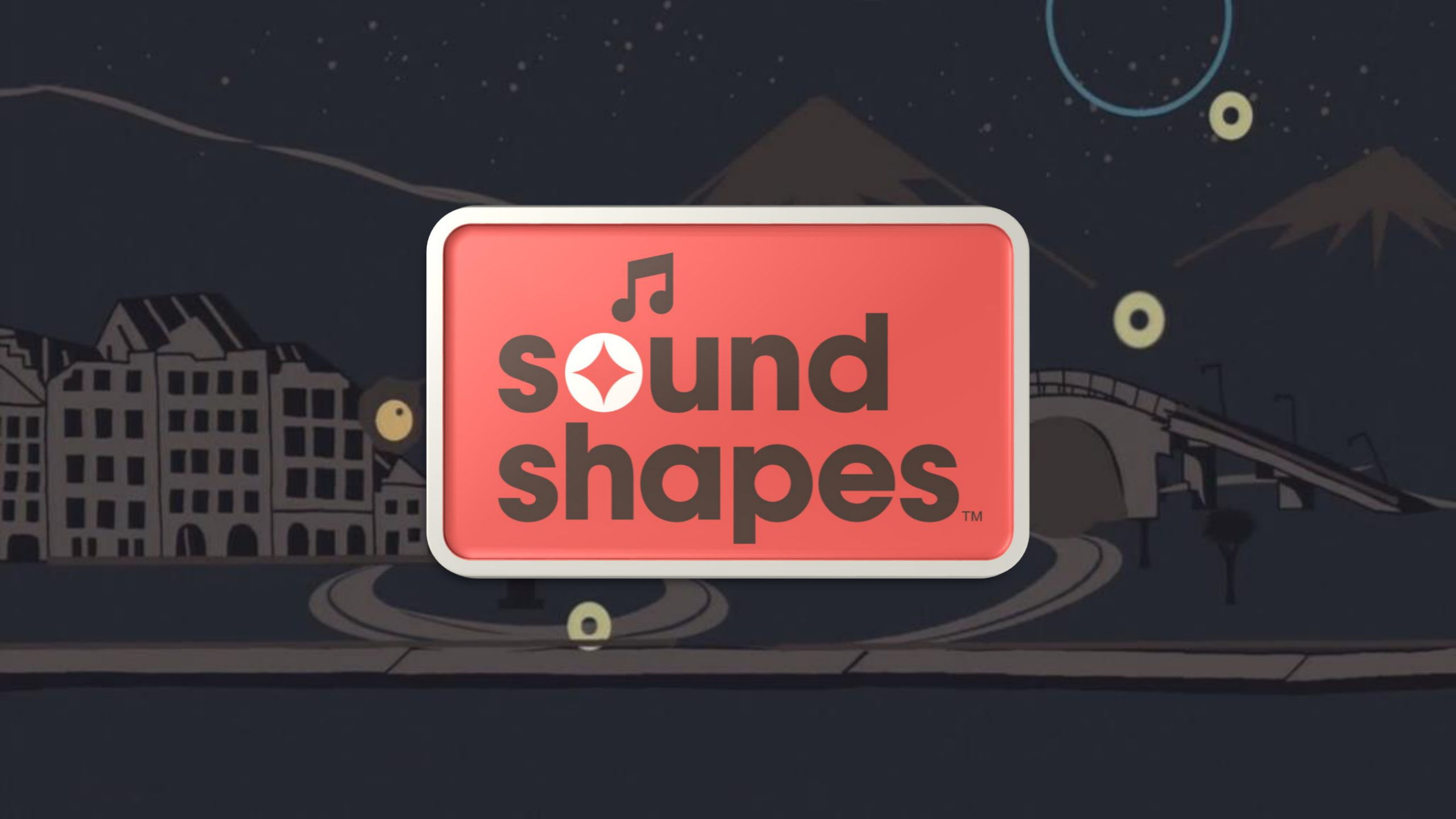


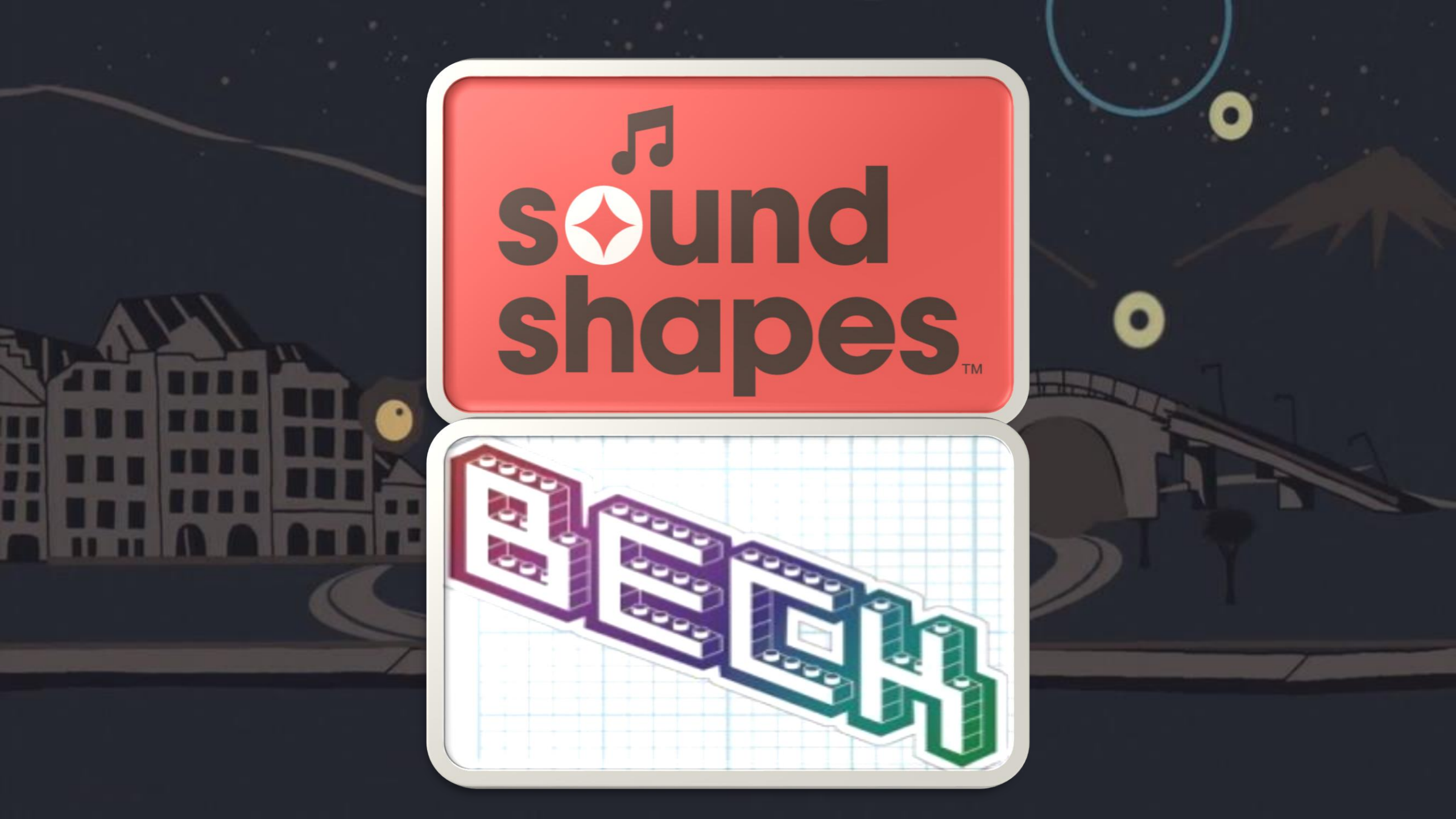
VERTICAL LAYERING?





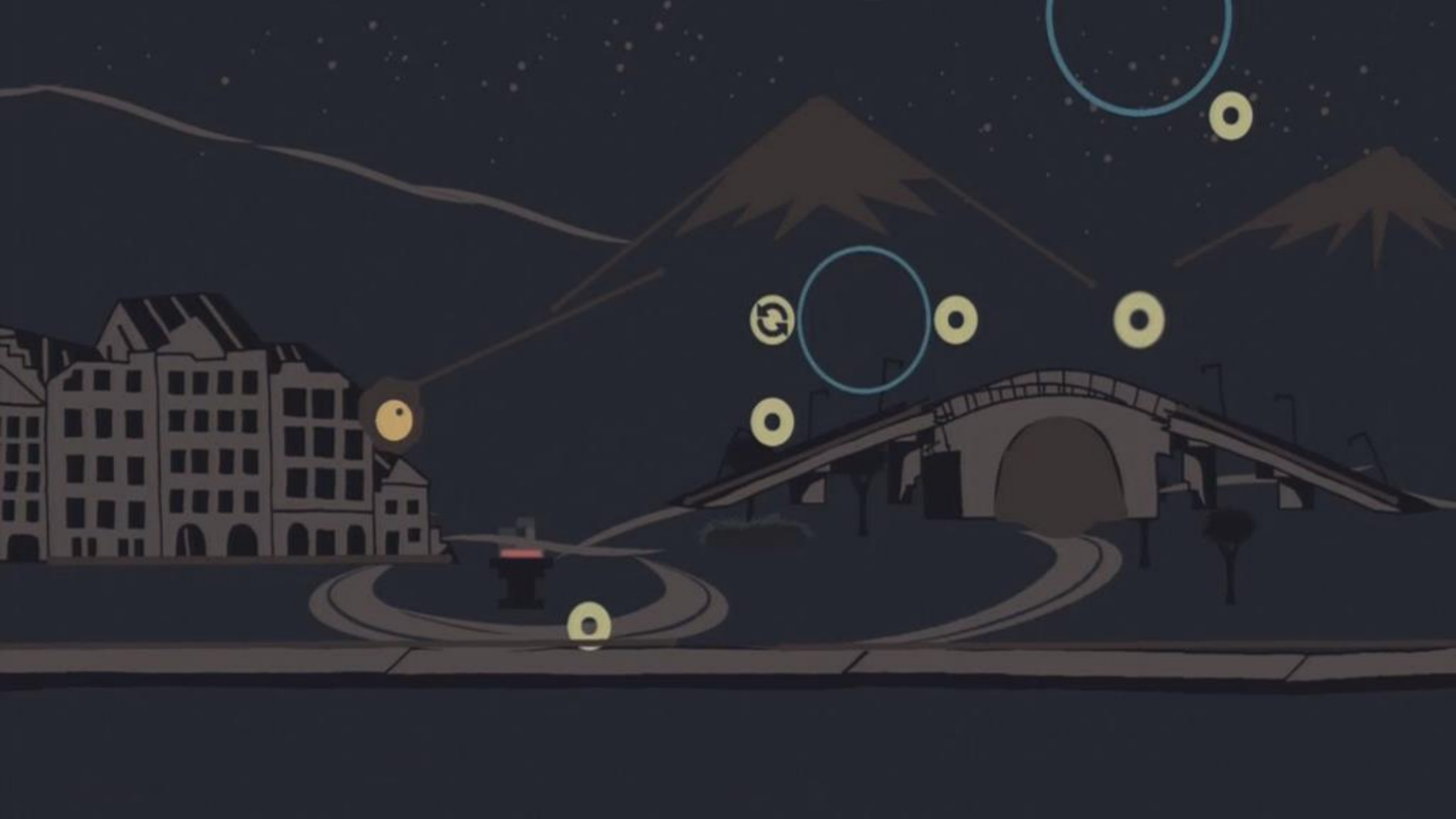



sound
shapes™


sound
shapes
TM
BEGIN


BECK
CITIES


CITIES




AHHHHHHHH

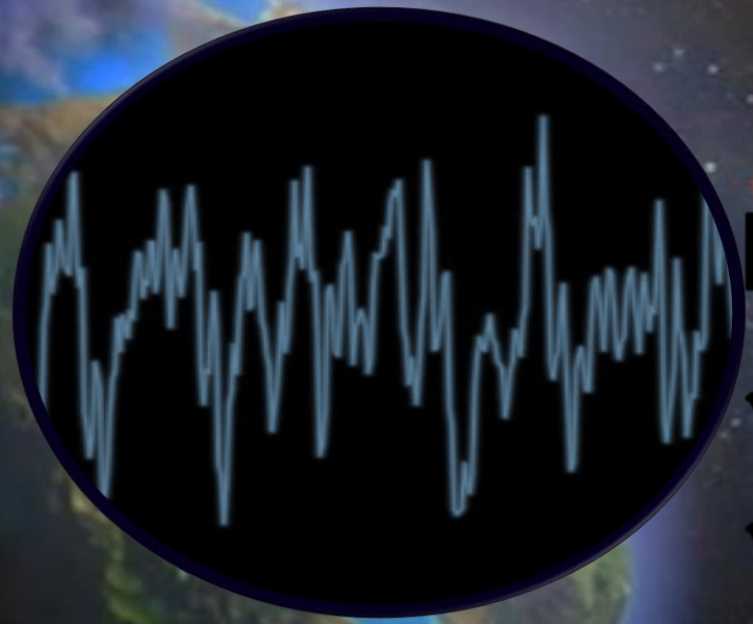
INTERACTIVE MUSIC



Recorded Music

- ✓ Horizontal Resequencing
- ✓ Vertical Layering

INTERACTIVE MUSIC



Recorded Music

- ✓ Horizontal Resequencing
- ✓ Vertical Layering

INTERACTIVE MUSIC



INTERACTIVE MUSIC

Not Recorded Music

- ✓ *Not* a WAV
- ✓ *Not* an OGG
- ✓ *Not* an MP3, etc.



Music Data

INTERACTIVE MUSIC





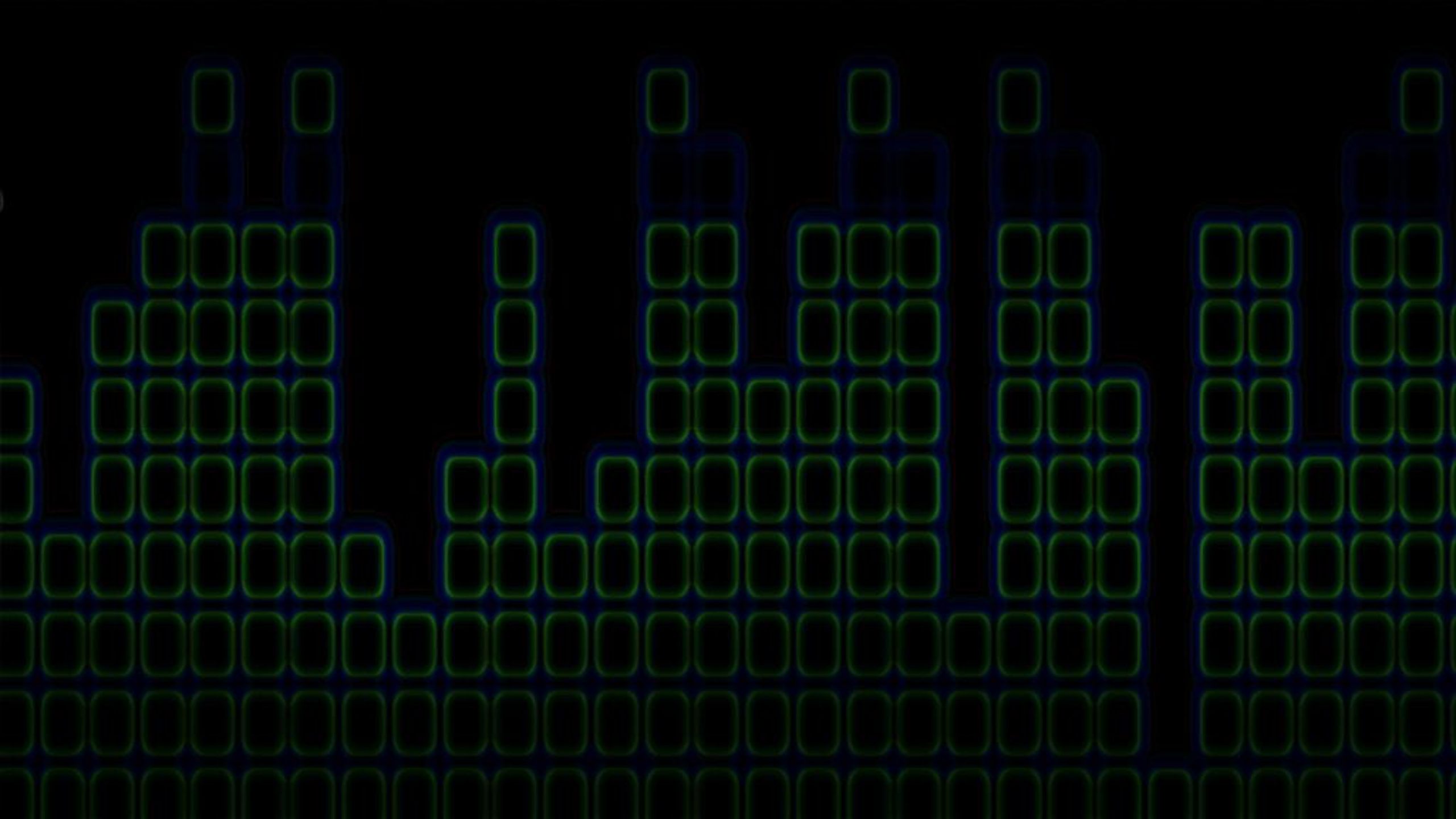
Sound Bank

Music Data

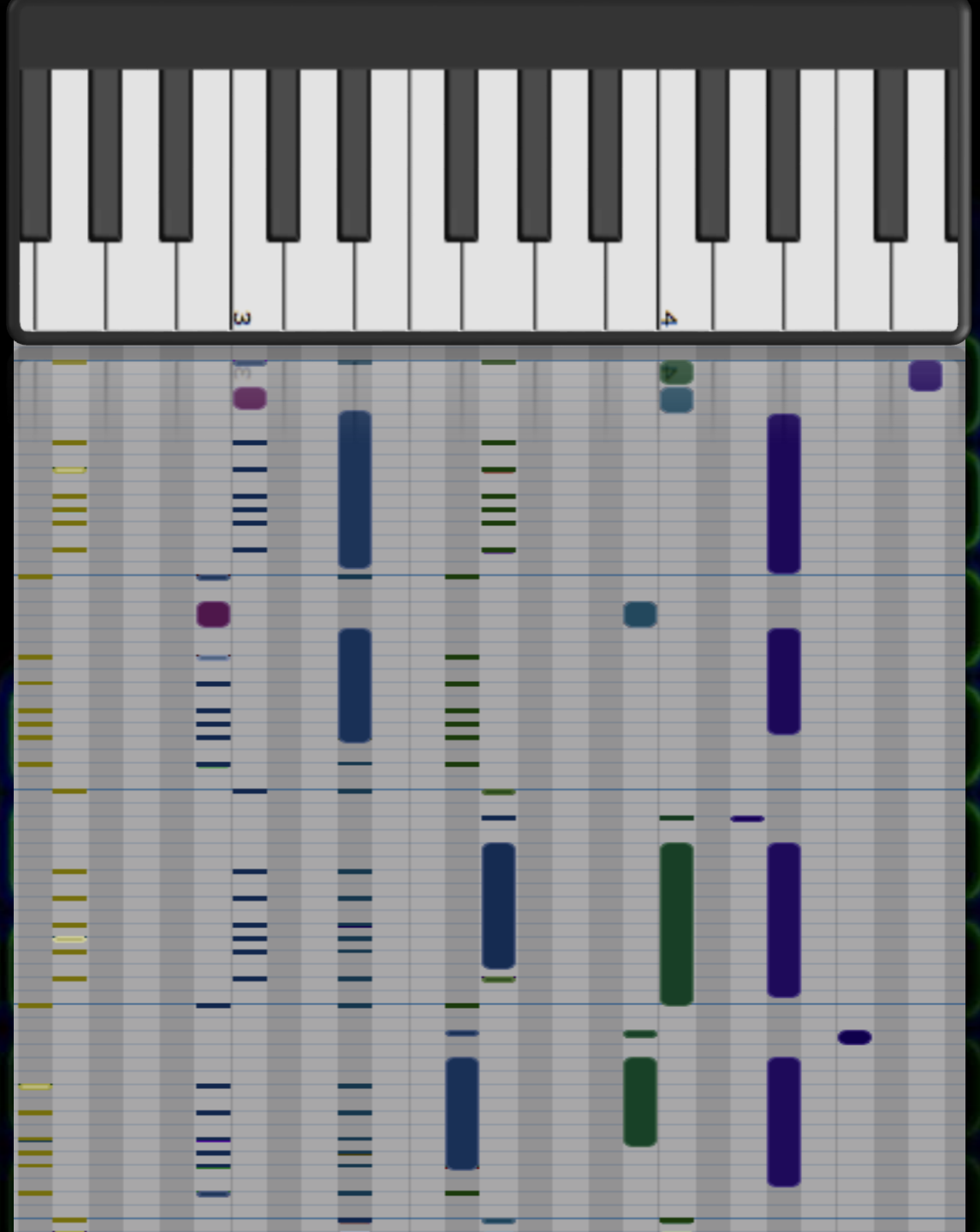
MIDI

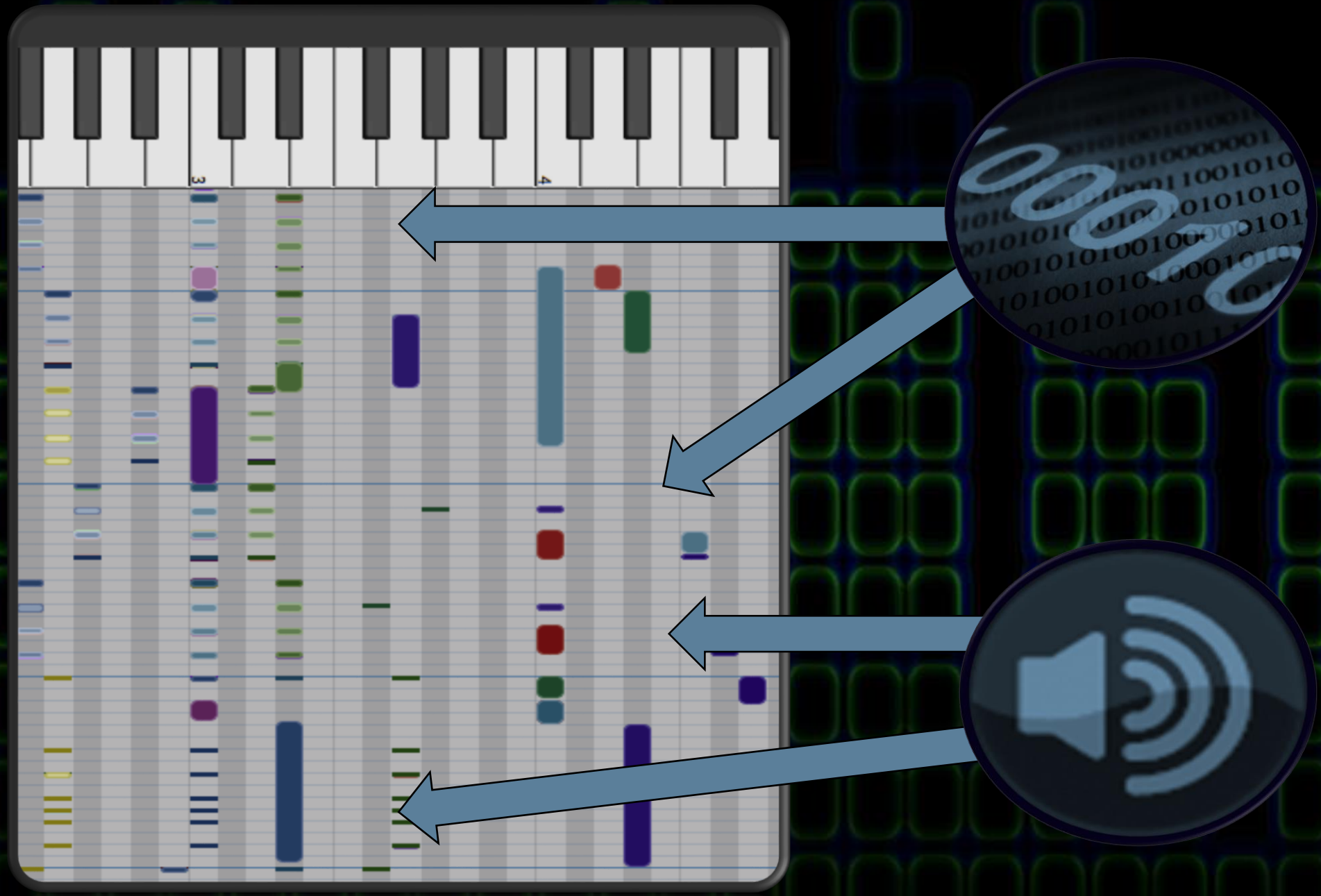


Musical Instrument Digital Interface




Bösendorfer






LeChuck's Revenge
MONKEY ISLAND 2


LeChuck's Revenge
MONKEY ISLAND 2
Interactive
MUsic
Streaming
Engine

IMUSE








LeChuck's Revenge
MONKEY ISLAND 2


LeChuck's Revenge
MONKEY ISLAND 2


NINTENDO DS


SHREK
THE THIRD
NINTENDO DS

Shrek the Third



Small Memory Budget

- ✓ Synth Score
- ✓ Quirky & Retro
- ✓ Lo-Res Sound Files

Shrek the Third



MIDI

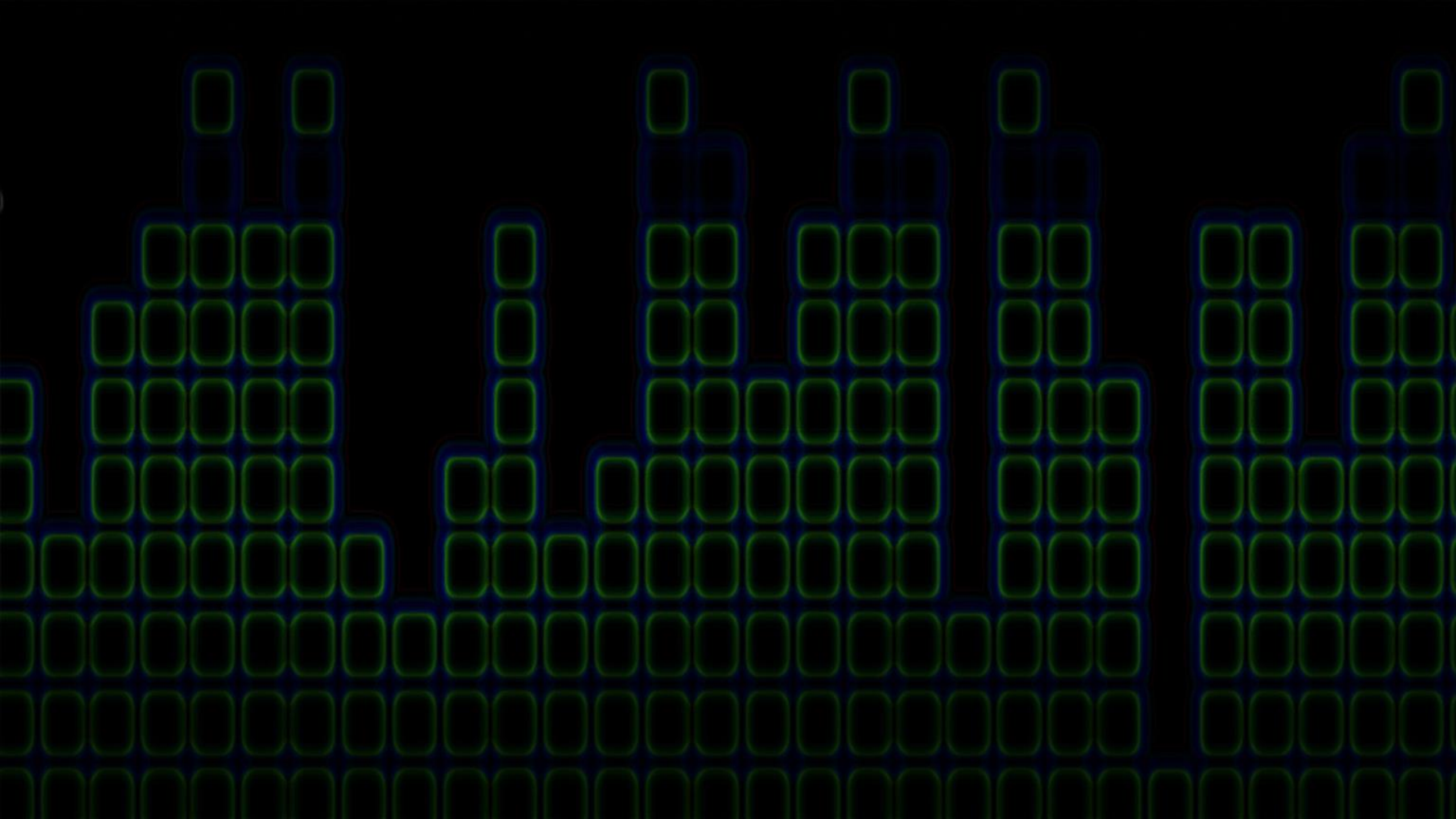




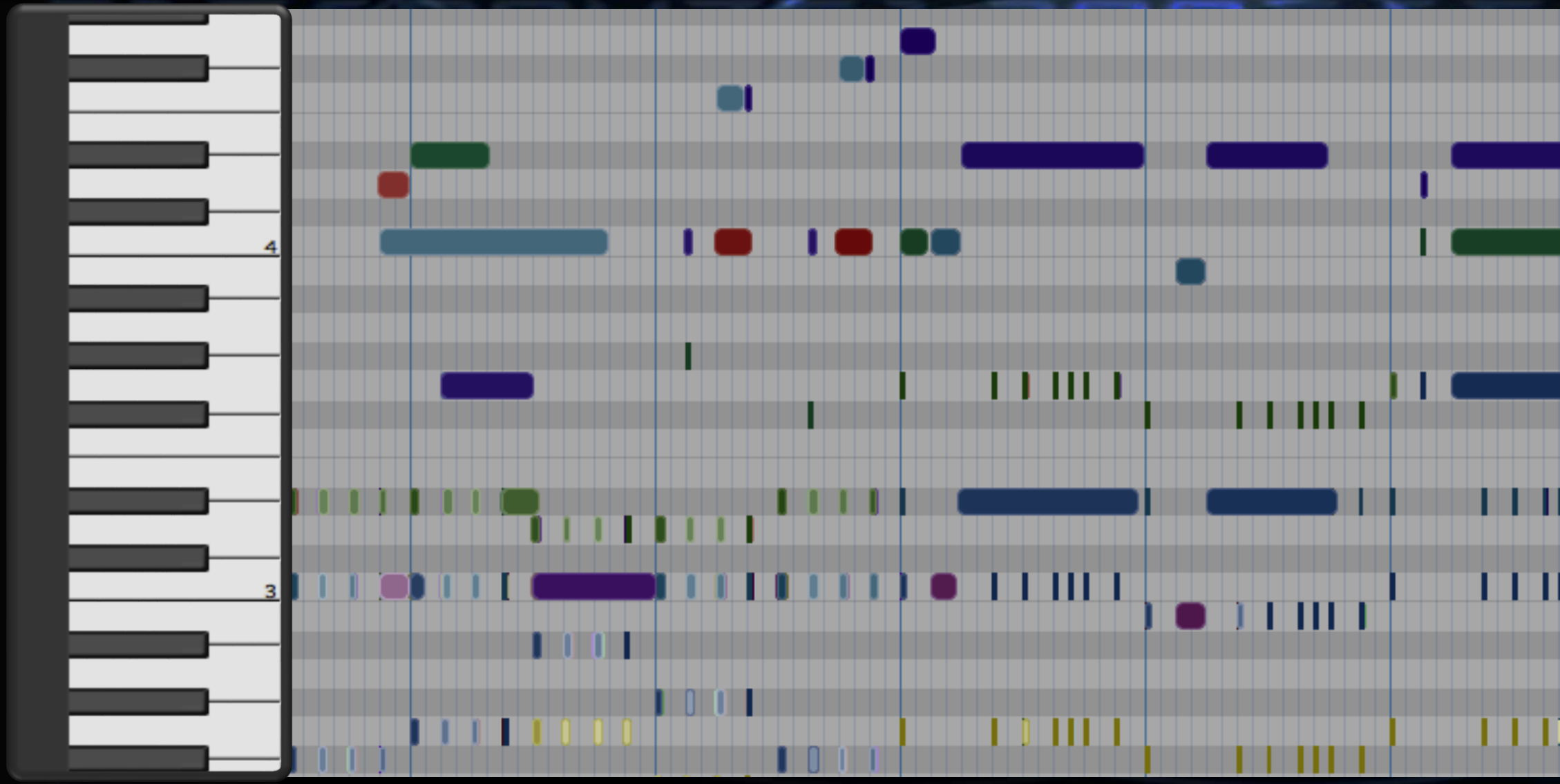
Sound Bank

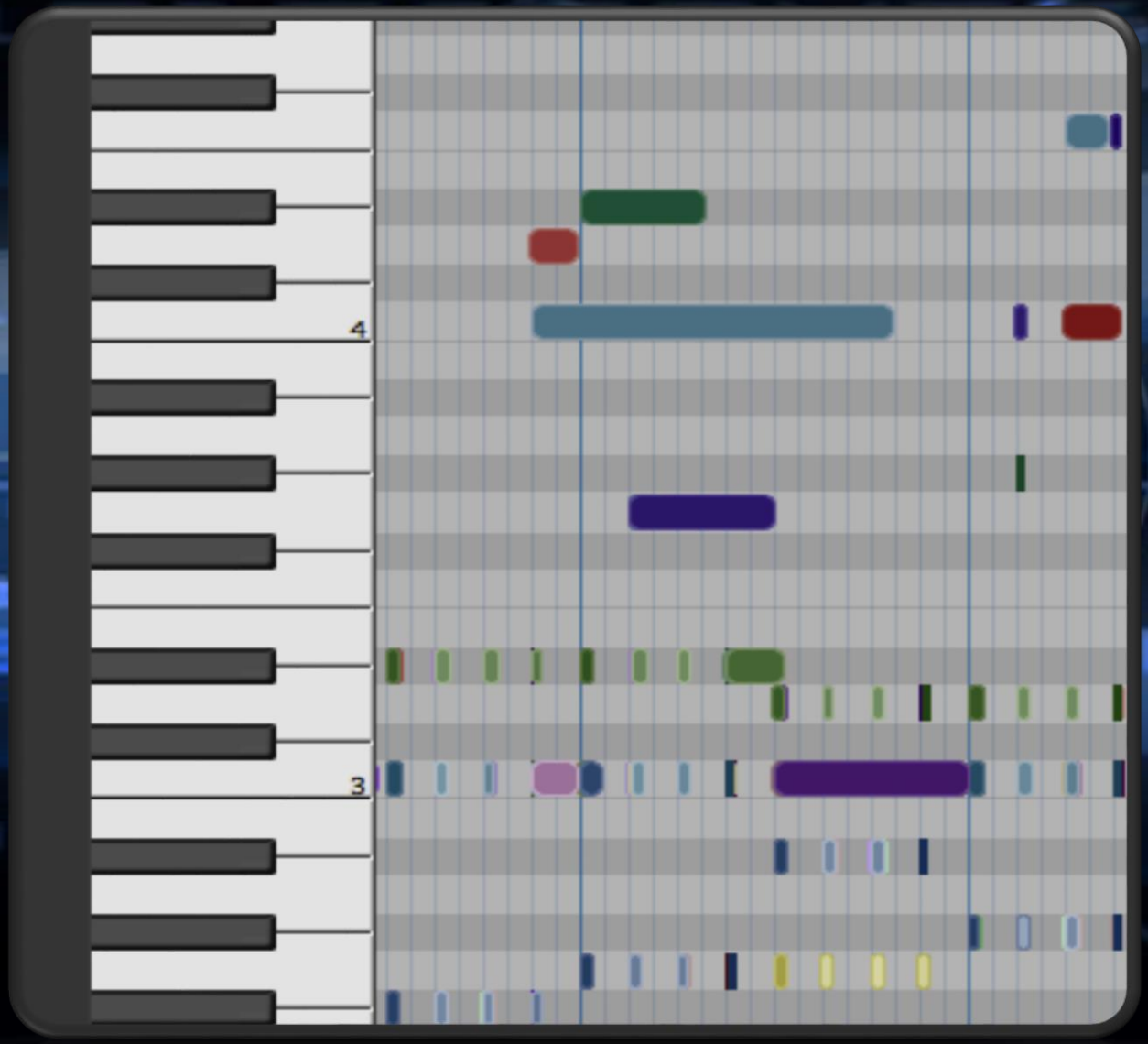
Music Data


THE LEGEND OF
ZELDA
Twilight Princess




4
3

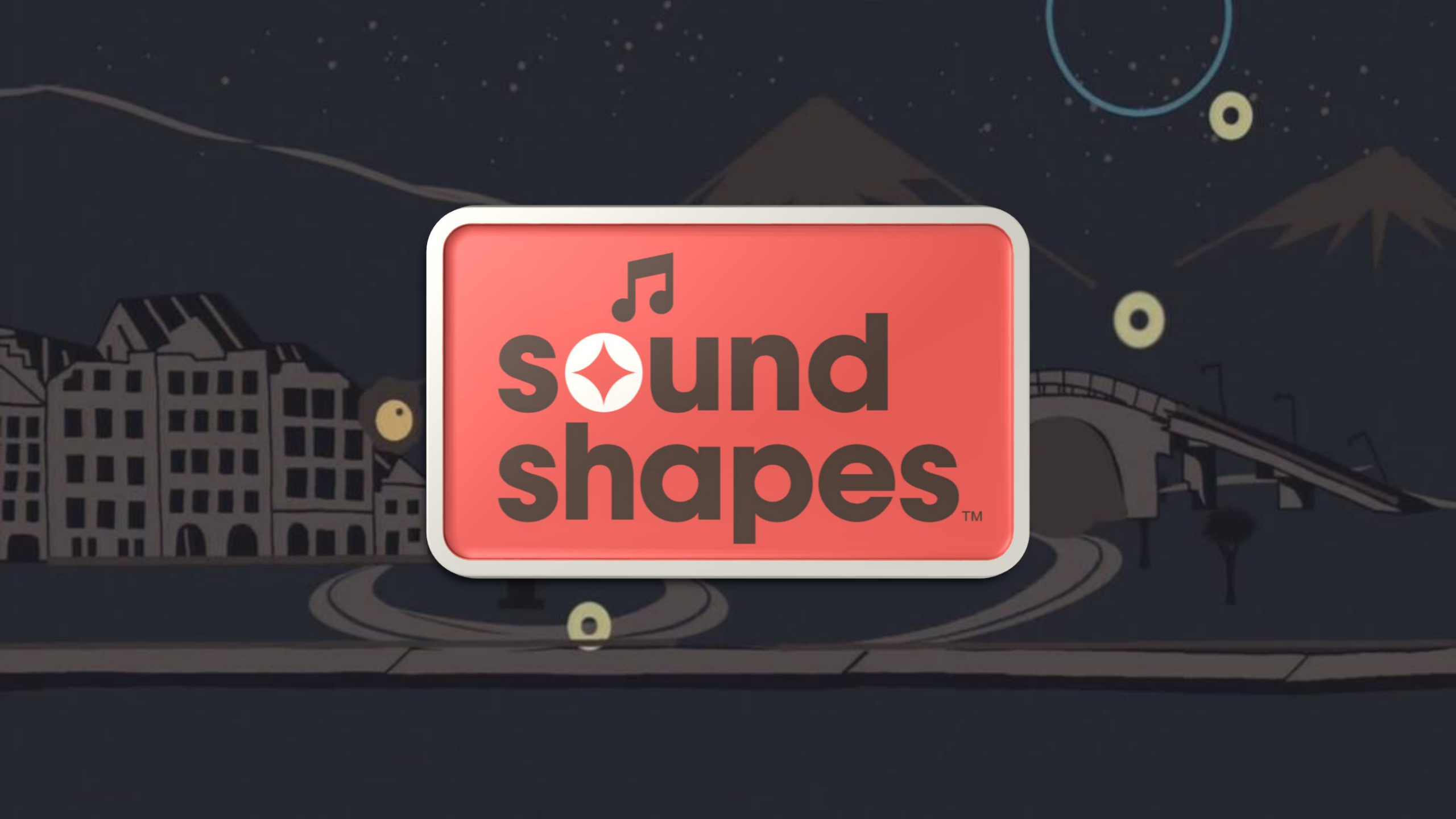

4
3

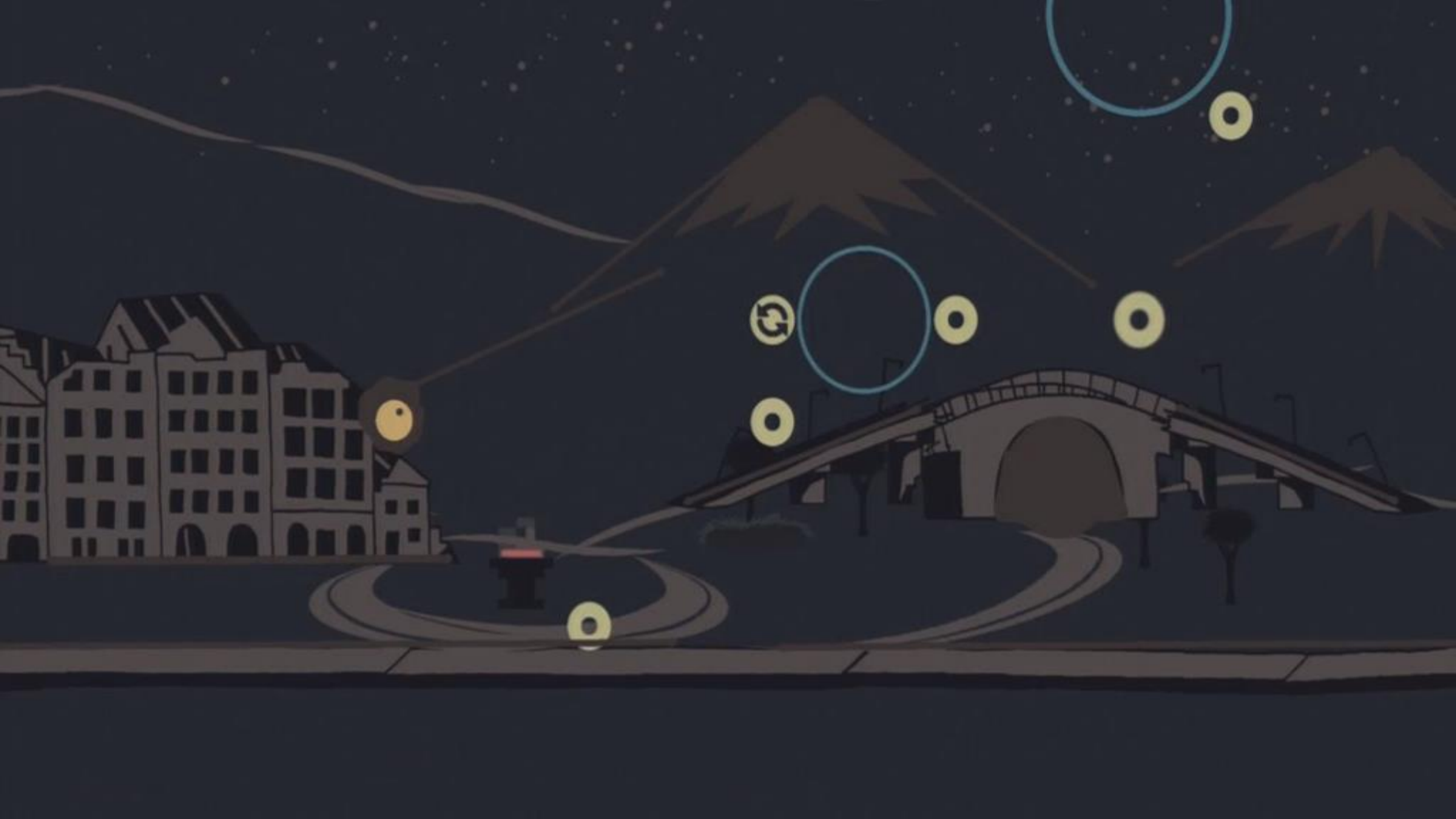




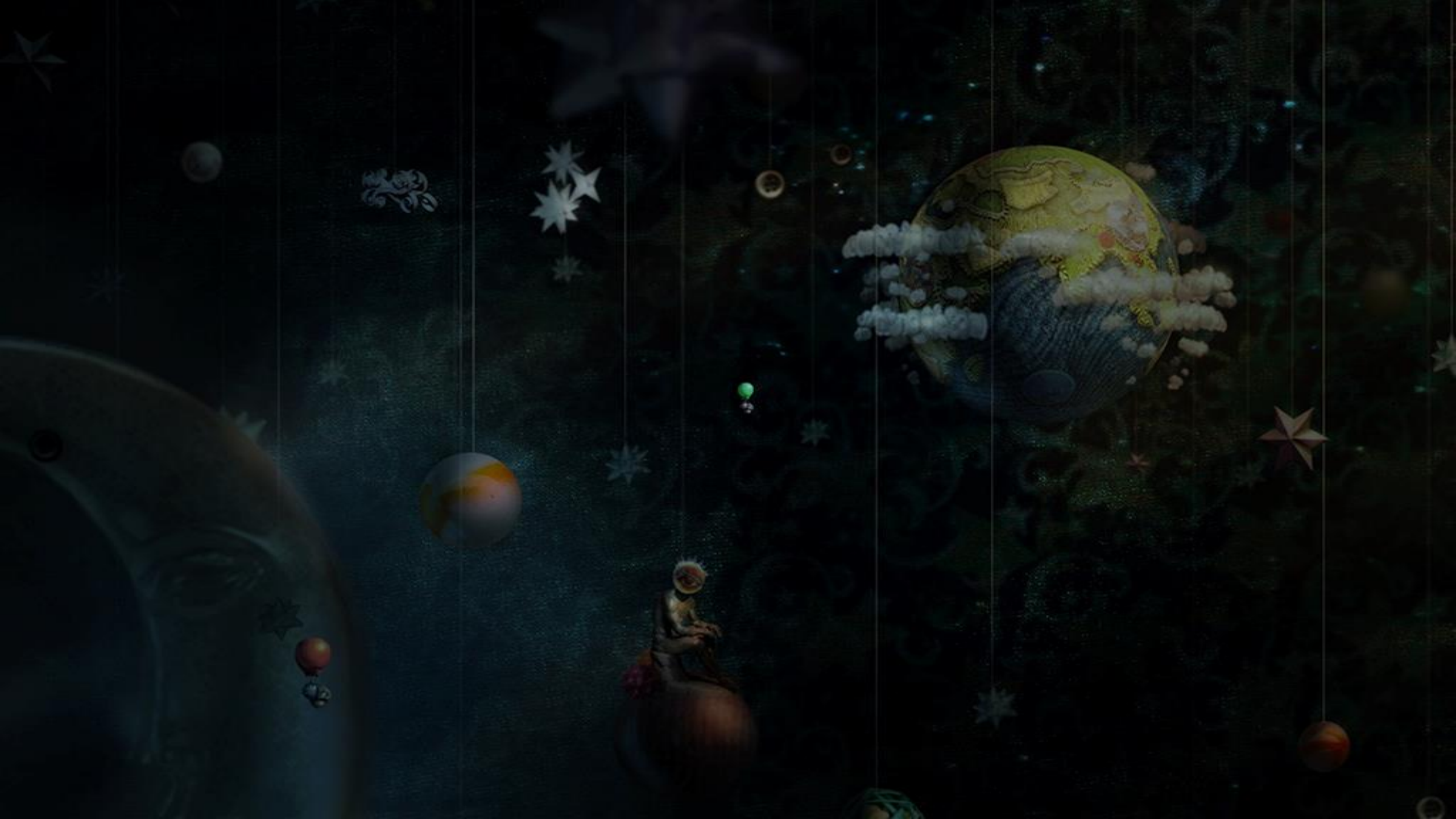
MIDI




sound
shapes™




LittleBIG
Planet™
2
BAIYON





MODULE FORMAT





Sound Bank

Music Data

MODULE FORMAT





Sound Bank

Music Data

MODULE FORMAT





Sound Bank

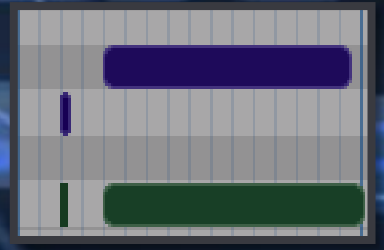
Music Data

MODULE FORMAT

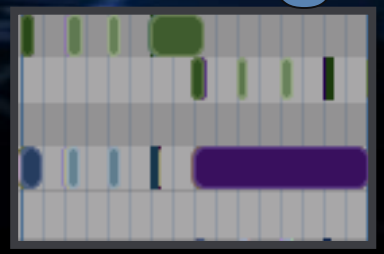
-1-



-2-



-3-





MOD


Unreal




BEJEWELED
3
™



Music Data



- ✓ MIDI
- ✓ MOD
- ✓ Generative System

TABLE de MUSIQUE.



TABLE de MUSIQUE.





INDETERMINACY




ballblazer
Riffology



Riffology



Riffology



G = 80%

Riffology



G = 80%

D = 15%

Riffology



G = 80%

D = 15%

E = 05%

Riffology



G = 80%

D = 15%

E = 05%

Riffology

ballblazer



32 Melody Fragments

calculated via

Conditional Statements

Riffology

ballblazer



32 Melody Fragments

calculated via

Conditional Statements

Riffology



Generative Music



- ✓ IS UNPREDICTABLE
- ✓ IS UNMEMORABLE
- ✓ FIGHTS REPETITION FATIGUE


MC
MR
ML
CE
ON
SHARE
OPTIONS


ELECTROPLANKTON™
MIC
X
Y
A
B
START
SELECT




MIC
X
Y
A
B
START
SELECT



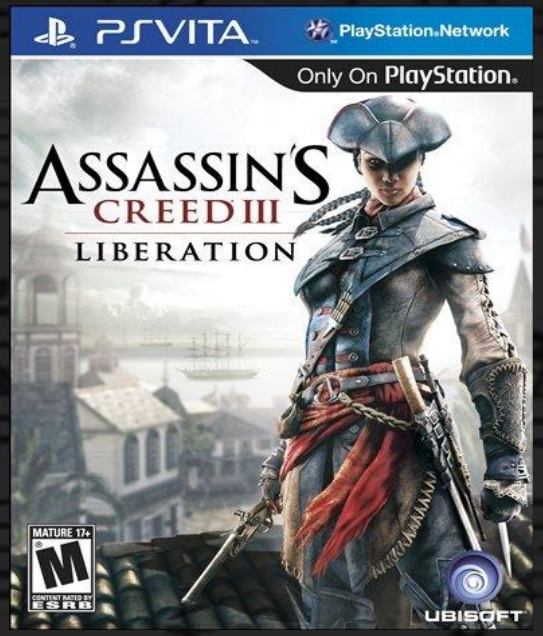
Generative Music

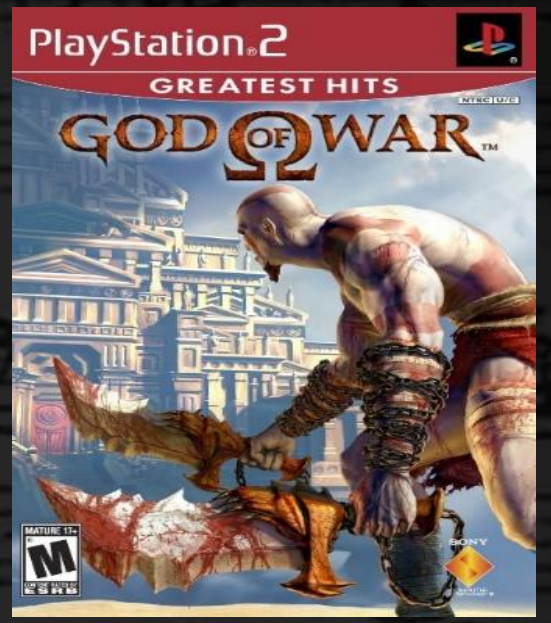


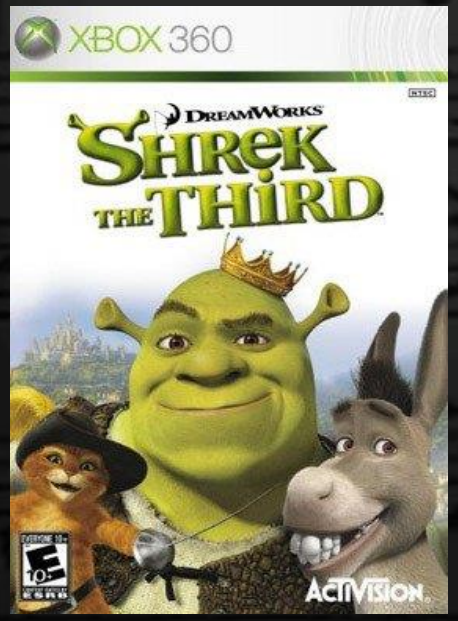

Frogger
SPORE

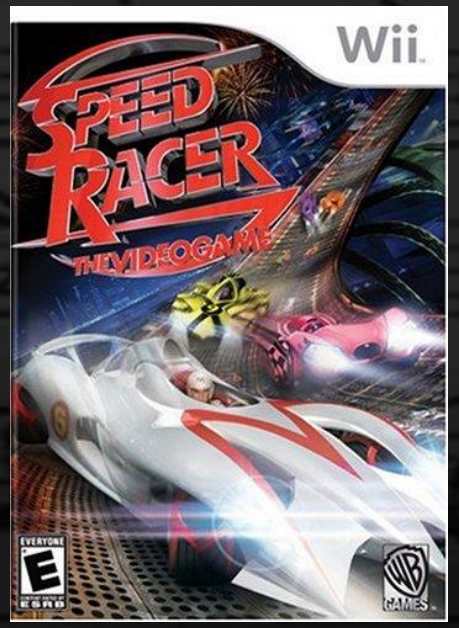
Advanced Composition Techniques for Adaptive Systems

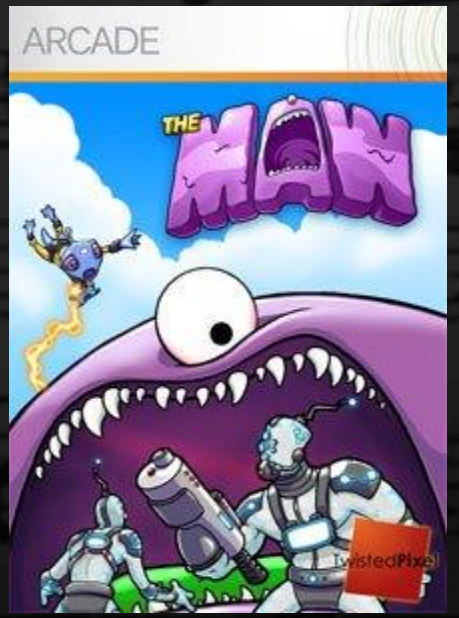

PS3
PlayStation Move
Compatible
Only On PlayStation
LittleBIG Planet 2
EVERYONE
E
ESRB
SONY


PS VITA
PlayStation Network
Only On PlayStation
ASSASSIN'S CREED III
LIBERATION
MATURE 17+
M
ESRB
UBISOFT


PlayStation 2
GREATEST HITS
GOD OF WAR
MATURE 17+
M
ESRB
SONY


XBOX 360
DREAMWORKS
SHREK THE THIRD
ACTIVISION


Wii
SPEED RACER
THE VIDEOGAME
EVERYONE
E
ESRB
WB GAMES


ARCADE
THE MAN
TwistedPixel


Wii
SPORE HERO
EA


LUMINES
PUZZLE FUSION


ballblazer


Frogger


THE LEGEND OF
ZELDA
Twilight Princess


LeChuck's Revenge
MONKEY ISLAND 2


TRON 2.0


PORTAL 2

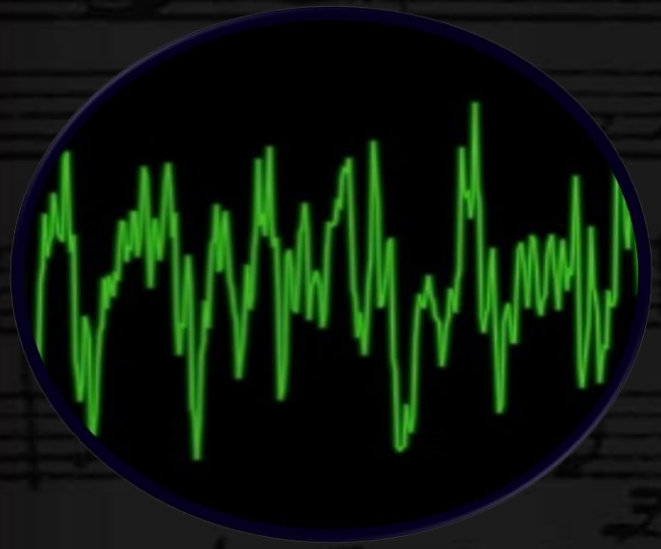

ELECTROPLANKTON


BEJEWELED
3


Unreal


sound
shapes

INTERACTIVE MUSIC



Recorded Music

- ✓ Horizontal Resequencing
- ✓ Vertical Layering

INTERACTIVE MUSIC



Music Data

- ✓ MIDI
- ✓ MOD
- ✓ Generative System

LINEAR MUSIC



TABLE de MUSIQUE.





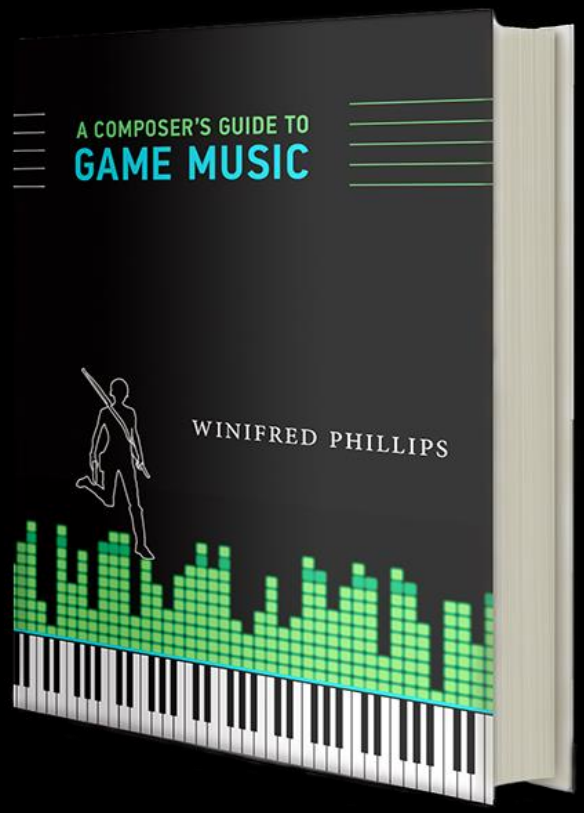












Advanced Composition Techniques for Adaptive Systems

Speaker Name: Winifred Phillips
Twitter: @winphillips
Facebook.com/winifredphillips

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MOSCONE CENTER · SAN FRANCISCO, CA
MARCH 2-6, 2015 · EXPO: MARCH 4-6, 2015